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The Commonwealth of Massachusetts
Department of Public Safety
Office of the State Fire Marshal
1010 Commonwealth Avenue
Boston, Massachusetts 02215

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SUFFOLK COUNTY FIRE DATA ANALYSIS

1991

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Prepared by: The Suffolk County Arson Prevention Program
Office of the State Fire Marshal
1010 Commonwealth Avenue
Boston, MA 02215

Data Source: 1991 Massachusetts Fire Incident Reporting System

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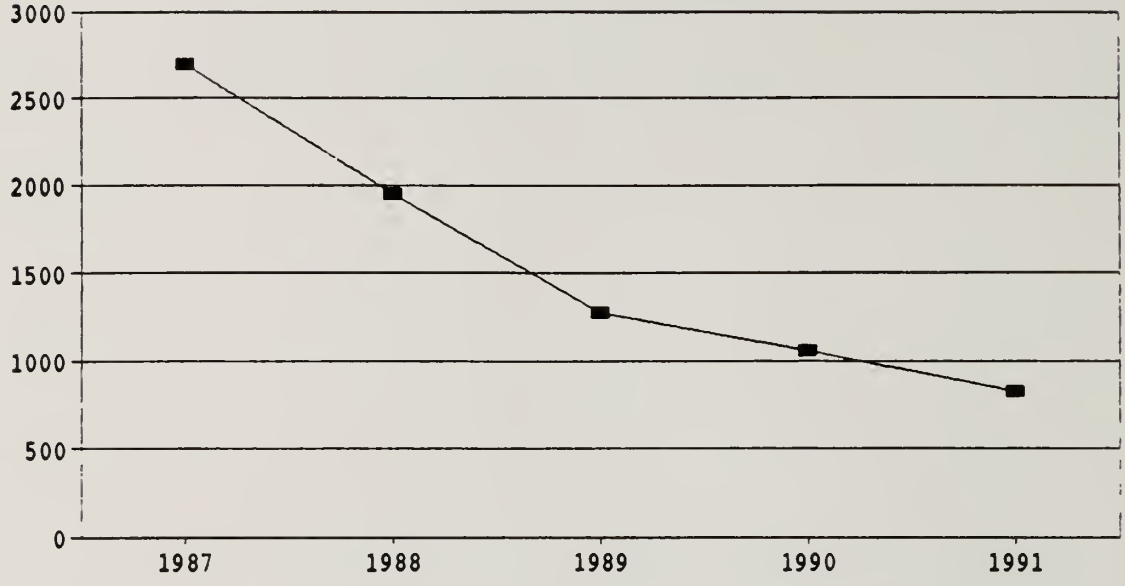
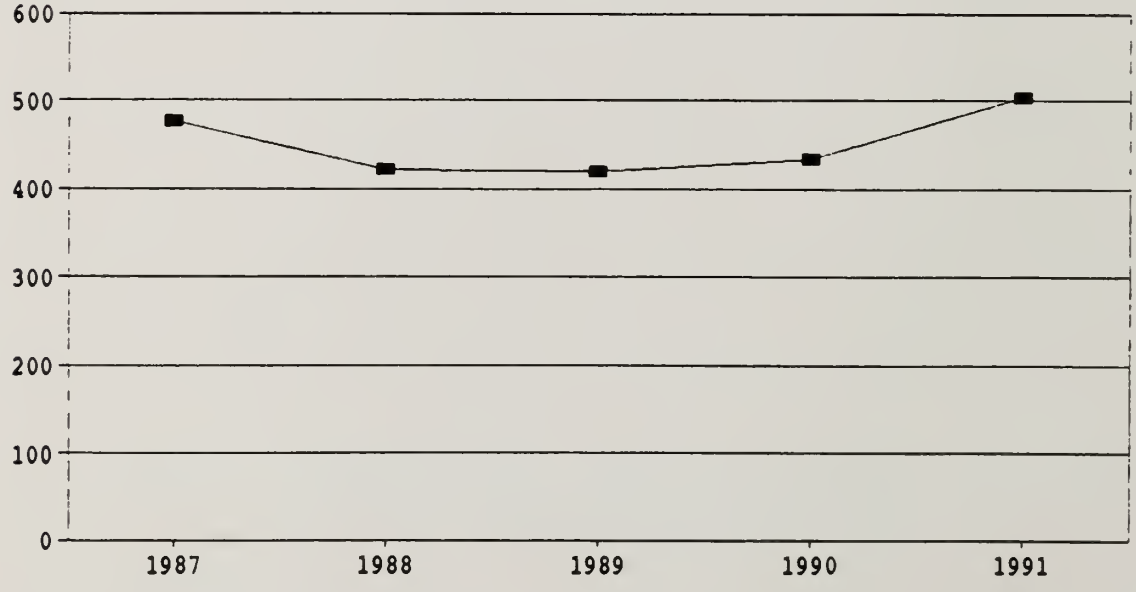
VEHICLE ARSON IN SUFFOLK COUNTY
1987 - 1991



STRUCTURE ARSON IN SUFFOLK COUNTY
1987 - 1991



INTRODUCTION

Suffolk County is comprised of four communities: the City of Boston, the largest city in the Commonwealth; the City of Chelsea; the City of Revere; and the Town of Winthrop. Because more than 85% of Suffolk County's residents live in Boston, statistics about the whole county are very heavily influenced by Boston's experience and may not reveal important problems in the other communities.

FIRES BY SITUATION FOUND

In 1991, 2,444 structure fires, 1,572 motor vehicle fires, and 3,795 outside and other fires, or a total of 7,811 fires, caused 9 civilian deaths, 147 civilian injuries, 335 fire service injuries and an estimated dollar loss of $32,492,563 in Suffolk County.

ARSON BY SITUATION FOUND

The 504 structure arsons, 820 motor vehicle arsons, and 104 outside and other arsons, or a total of 1,428 Suffolk County arson fires, resulted in 2 civilian deaths, 35 civilian injuries, 167 fire service injuries and an estimated total dollar loss of $15,994,175. For purposes of analysis, a fire is considered arson when the ignition factor is either incendiary or suspicious.

1991 COMPARED TO PREVIOUS YEARS

All 9 fire deaths occurred in Boston. Boston Fire Commissioner Martin Pierce, quoted in the Boston Globe, noted that these 9 civilian fire deaths represents a 23 year low for the City of Boston.

The total number of reported fires in Suffolk County increased by 13% from 1990 to 1991. Although reported structure fires increased by more than 50%, a significant portion of this increase is attributable to administrative policy changes on the local level regarding the definition of a reportable incident.

Motor vehicle fires decreased by 13% to the lowest point since 1984. The total number of reported outside and other fires increased by 9%.

Although the total number of reported arson fires decreased by 8%, structure arsons actually increased by 16%. Motor vehicle arsons decreased by 22% and reported outside and other incidents increased by 65%. Arsonists caused 21% of Suffolk County's structure fires, 52% of the motor vehicle fires, and 7% of the outside and other fires.

FIRE DEPARTMENT ACTIVITY

Sixteen (16) fire service personnel, 2 engine companies, 1 ladder company and 2 other vehicles responded to the average Suffolk County fire in 1991. An average of 7 staff hours was spent at each fire incident.

Structure Fires

Twenty-two (22) fire service personnel, 2 engine companies, 2 ladder companies and 2 other vehicles responded to the average structure fire in Suffolk County. An average of 9 staff hours was spent at each incident.

Motor Vehicle Fires

Nine (9) fire service personnel, 1 engine company, 1 ladder company and 2 other vehicles responded to the average Suffolk County motor vehicle fire. An average of 3 staff hours was spent at each of these fires.

Outside and Other Fires

Nine (9) fire service personnel, 1 engine company, 1 ladder company and 2 other vehicles responded to the average outside or other fire in Suffolk County. An average of 4 staff hours was spent at each of these fires.

RESIDENTIAL STRUCTURE FIRES

The leading causes of residential structure fires in Suffolk County were: unattended cooking; arson; the careless use and disposal of smoking materials; short circuits or ground faults in appliances, cords, or wiring; and problems with central heating units.

Smoke or heat detectors were present and operated in 70% of the residential structure fires in which detector status was reported. No detectors were present in 12% of these fires. Detectors were present, but failed to operate, in 19% of these incidents. The failure to regularly check and maintain detectors that are already in place is now a bigger problem than the total absence of smoke detectors.

DATA SOURCE

The statistics on fire and arson in this report were extracted from the Massachusetts Fire Incident Reporting System (MFIRS). According to Massachusetts law, all fires resulting in a dollar loss or human casualty must be reported to the Office of the State Fire Marshal. Any fire in or on a structure is considered a structure fire. Brush and rubbish fires which do not result in a dollar loss or casualty may be submitted at the discretion of the local fire chief. Population figures were obtained from the Massachusetts Institute for Social and Economic Research, University of Massachusetts at Amherst. Their data was based on the 1990 Census of Population and Housing conducted by the Bureau of the Census.

THE CITY OF BOSTON

In 1991, Boston's 1,845 structure fires, 1,382 motor vehicle fires, and 3,597 outside and other fires, or a total of 6,824 fires, caused 9 civilian deaths, 129 civilian injuries, 208 fire service injuries and an estimated dollar loss of $28,893,853.

The 452 structure arsons, 732 motor vehicle arsons, and 43 outside and other arsons, or a total of 1,227 arson fires caused 2 civilian deaths, 33 civilian injuries, 111 fire service injuries, and an estimated dollar loss of $14,660,245.

Although the total number of arson fires decreased by 13.5%, arson continued to be the leading fire problem in Boston. Arsonists caused 53% of Boston's motor vehicle fires, 24.5% of Boston's structure fires, and 20.5% of all residential structure fires. The decline in arson was due almost totally to the 25% drop in motor vehicle fires. Structure arson actually increased by 15.6%, marking the second year in a row in which the frequency of structure arson increased.

More than 26% of Boston's residential structure fires were caused by unattended cooking. Arson, the careless use and disposal of smoking materials, short circuits or ground faults, exposure to other fires, and problems with dryers were the other leading causes of these incidents.

Boston Fire Department utilizes an internal coding system for incident reporting and then converts their data to be compatible with MFIRS. Because of minor variations in the way incidents are categorized, a slight difference exists between the numbers generated by the Boston Fire Department and those generated using the Masachusetts Fire Incident Reporting System. Fire trends and the rank order of causes remain the same under both systems.

THE CITY OF CHELSEA

In 1991, Chelsea's 461 structure fires, 84 motor vehicle fires, and 169 outside and other fires, or a total of 715 fires, caused 11 civilian injuries, 121 fire service injuries and an estimated dollar loss of $2,056,485.

The 27 structure arsons, 37 motor vehicle arsons, and 43 outside and other arsons, or 108 arson fires caused 2 civilian injuries, 55 fire service injuries, and an estimated dollar loss of $1,042,555.

The total number of fires reported to the Massachusetts Fire Incident Reporting System increased by almost 350% since 1990. A very large percentage of this increase is attributable to the chief's new policy of documenting all fires, including fires in uninsured properties that would have gone unreported in the past.

The City of Chelsea had the highest rate of arson fires, structure arsons, and motor vehicle arsons per 1,000 population in Suffolk County. The total number of reported structure arsons increased by 69% while motor vehicle arsons decreased by 18% from 1990 to 1991.

More than 60% of Chelsea's residential structure fires were caused by unattended cooking. Problems with central heating units and arson were other leading causes.

THE CITY OF REVERE

In 1991, Revere's 96 structure fires, 95 motor vehicle fires, and 16 outside and other fires, or a total of 207 fires, caused 6 civilian injuries, 6 fire service injuries and an estimated dollar loss of $1,493,850.

The 20 structure arsons, 49 motor vehicle arsons, and 7 outside and other arsons, or 76 arson fires caused 1 fire service injury and an estimated dollar loss of $277,350. More than half of the motor vehicle fires, 21% of the structure fires, and 16% of the residential structure fires were considered incendiary or suspicious.

The total number of reported fires increased by 3.5% while structure fires decreased by 6%. Motor vehicle fires increased by 19%, motor vehicle arsons increased by 44%, and structure arsons increased by 25%.

In addition to arson, other leading causes of Revere's residential structure fires were: unattended cooking; the careless use and disposal of smoking materials; and short circuits or ground faults in electrical equipment or appliances.

THE TOWN OF WINTHROP

In 1991, Winthrop's 42 structure fires, 11 motor vehicle fires, and 13 outside and other fires, or a total of 66 fires, caused 1 civilian injury and an estimated dollar loss of $48,375.

The 5 structure arsons, 2 motor vehicle arsons, and 10 outside and other arsons, or 17 arson fires caused an estimated dollar loss of $14,025.

Cooking was the leading cause of residential structure fires in Winthrop. Problems with washing machines and with dryers were other leading causes of these incidents.

SUFFOLK COUNTY **POPULATION: 663,906**

TOTAL FIRES: 7,811 **$32,492,563**

11.8 Fires/1,000 Population

Structure Fires:	2,444	31.3%	$26,539,458
Vehicle Fires	1,572	20.1%	5,560,780
Other Fires	3,795	48.6%	392,325

Casualties

9 fatal fires 1.15 Civilian Deaths/1,000 Fires
9 Civilian Deaths .14 Civilian Deaths/10,000 Population

Injuries: 147 Civilians 335 Fire Service

RESIDENTIAL STRUCTURE FIRES

TOTAL: 1,921

Apartments:	1,493 (77.7%)	1- & 2-Family Homes:	348 (18.0%)
Dormitories:	36 (1.9%)	Hotels, Motels:	21 (1.1%)
Rooming Houses:	18 (0.9%)	Home Hotel:	1 (0.1%)
Other:	4 (0.2%)		

Deaths: 7 Civilians
Injuries: 120 Civilians 200 Fire Service

DETECTORS

None present: 202 (10.5%)
Present and Operated: 1,168 (60.8%)
Present, but did not operate: 316 (16.4%)
Unknown: 225 (11.7%)

AREA OF ORIGIN		EQUIPMENT		FORM OF HEAT OF IGNITION	
Kitchen	46.9%	None	37.6%	Properly Op Elec Eq	21.0%
Bedroom	12.0%	Stovetop	26.1%	Heat/Gas Fueled Eq	14.9%
Crawl Space	5.1%	Port. Cook.	1.9%	Cigarette	7.6%
Living Room	5.0%	Cntrl Heat	1.8%	Match	7.2%
Open Porch	4.0%	Unknown	20.0%	Unknown	16.6%

MATERIAL IGNITED		IGNITION FACTOR	
Cooking Materials	37.2%	Unattended	33.7%
Rubbish, Waste	6.3%	Arson	16.3%
Magazine, Newspaper	4.9%	Abandoned Material	10.2%
Structural Member	4.7%	Short Circuit/Ground Fault	4.4%
Unknown	8.6%	Unknown	5.0%

MONTH	TOTAL FIRES	STRUCTURE FIRES	VEHICLE FIRES	OTHER FIRES
JANUARY	500	179	133	188
FEBRUARY	503	163	138	202
MARCH	575	182	132	261
APRIL	730	162	132	436
MAY	854	222	111	521
JUNE	746	146	131	469
JULY	790	150	143	497
AUGUST	609	214	119	276
SEPTEMBER	632	243	124	265
OCTOBER	635	243	133	259
NOVEMBER	600	231	125	244
DECEMBER	637	309	151	177

DAY	TOTAL FIRES	STRUCTURE FIRES	VEHICLE FIRES	OTHER FIRES
SUNDAY	1231	394	234	603
MONDAY	1093	346	203	544
TUESDAY	1108	369	222	517
WEDNESDAY	982	315	206	461
THURSDAY	1124	332	254	538
FRIDAY	1150	341	231	578
SATURDAY	1122	347	221	554

TIME	TOTAL FIRES	STRUCTURE FIRES	VEHICLE FIRES	OTHER FIRES
0001 - 0400	1156	296	361	499
0401 - 0800	503	199	143	161
0801 - 1200	873	412	134	327
1201 - 1600	1474	495	219	760
1601 - 2000	1844	553	288	1003
2001 - 2400	1961	489	427	1045

MOTOR VEHICLE FIRES

TOTAL: 1,572

Automobiles: 1,302 (82.8%)
680 (52.2%) of the automobile fires attributed to arson

ARSON FIRES

TOTAL ARSONS: 1,428 **2.15 Arson Fires/1,000 Population**

	#	% TSF	% ARSON	DOLLAR LOSS
Structures:	504	20.6%	35.3%	$12,278,885
Vehicles:	820	52.2%	57.4%	3,647,475
Other Arsons:	104	2.7%	7.3%	67,815

Estimated Dollar Loss: $15,994,175

2 Civilian Deaths

35 Civilian Injuries 167 Fire Service Injuries

PEAK TIMES FOR

STRUCTURE ARSON			MOTOR VEHICLE ARSON		
TIME PERIOD	#	%	TIME PERIOD	#	%
1. 2001 - 2400	132	26.2%	1. 2001 - 2400	300	36.6%
2. 0001 - 0400	105	20.8%	2. 0001 - 0400	258	31.5%
3. 1601 - 2000	98	19.4%	3. 1601 - 2000	106	12.9%

PEAK FIXED PROPERTY USES FOR STRUCTURE ARSONS	#	%
1. Apartments	220	43.7%
2. One- & Two-Family Homes	72	14.3%
3. Non-residential Schools	19	3.8%
3. Care Of The Physically Restrained	16	3.2%

SUFFOLK COUNTY FIRES FROM 1987 TO 1991

YEAR	TOTAL FIRES	STRUC FIRES	VEH FIRES	OTHER FIRES	TOTAL ARSONS	STRUC ARSONS	VEH ARSONS	OTHER ARSONS
1987	10,327	1,759	3,920	4,648	3,237	478	2,700	59
1988	8,755	1,733	3,049	3,973	2,412	423	1,950	39
1989	7,171	1,629	2,183	3,359	1,750	419	1,277	54
1990	6,907	1,623	1,801	3,483	1,555	434	1,058	63
1991	7,811	2,444	1,572	3,795	1,428	504	820	104

SUFFOLK COUNTY FIRE EXPERIENCE BY COMMUNITY FOR 1991

	BOSTON	CHELSEA	REVERE	WINTHROP	SUFFOLK COUNTY
TOTAL FIRES	6,824	714	207	66	7,811
POPULATION	574,283	28,710	42,786	18,127	663,906
RATE/1,000 POPULATION	11.9	24.9	4.8	3.6	11.8
CIVILIAN DEATHS	9	0	0	0	9
FIRE SERVICE DEATHS	0	0	0	0	0
CIVILIAN INJURIES	129	11	6	1	147
FIRE SERVICE INJURIES	208	121	6	0	335
DOLLAR LOSS	$28,893,853	$2,056,485	$1,493,850	$48,375	$32,492,563
STRUCTURE FIRES	1,845	461	96	42	2,444
STRUCTURE FIRES/ 1,000 POPULATION	3.2	16.1	2.2	2.3	3.7
STRUCTURE FIRE DOLLAR LOSS	$23,515,728	$1,813,405	$1,183,850	$26,475	$26,539,458
RESIDENTIAL STRUCTURE FIRES	1,393	418	77	33	1,921
VEHICLE FIRES	1,382	84	95	11	1,572
VEHICLE FIRES/ 1,000 POPULATION	2.4	2.9	2.2	0.6	2.4
VEHICLE FIRE DOLLAR LOSS	$5,099,830	$235,450	$205,600	$19,900	$5,560,780
OTHER FIRES	3,597	169	16	13	3,795
OTHER FIRE DOLLAR LOSS	$278,295	$7,630	$104,400	$2,000	$392,325

SUFFOLK COUNTY ARSON EXPERIENCE BY COMMUNITY FOR 1991

	BOSTON	CHELSEA	REVERE	WINTHROP	SUFFOLK COUNTY
TOTAL ARSONS	1,227	108	76	17	1,428
POPULATION	574,283	28,710	42,786	18,127	663,906
RATE/1,000 POPULATION	2.1	3.8	1.8	0.9	2.2
CIVILIAN DEATHS	2	0	0	0	2
FIRE SERVICE DEATHS	0	0	0	0	0
CIVILIAN INJURIES	33	2	0	0	35
FIRE SERVICE INJURIES	111	55	1	0	167
DOLLAR LOSS	$14,660,245	$1,042,555	$277,350	$14,025	$15,994,175
STRUCTURE ARSONS	452	27	20	5	504
STRUCTURE ARSONS/ 1,000 POPULATION	0.8	0.9	0.5	0.3	0.8
STRUCTURE ARSON DOLLAR LOSS	$11,211,335	$880,275	$177,250	$10,025	$12,278,885
VEHICLE ARSONS	732	37	49	2	820
VEHICLE ARSONS/ 1,000 POPULATION	1.3	1.3	1.1	0.1	1.2
VEHICLE ARSON DOLLAR LOSS	$3,386,625	$159,750	$97,100	$4,000	$3,647,475
OTHER ARSONS	43	44	7	10	104
OTHER ARSON DOLLAR LOSS	$62,285	$2,530	$3,000	0	$67,815

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BOSTON FIRE DATA ANALYSIS

1991

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ANALYSIS OF BOSTON'S FIRES IN 1991

In 1991, Boston's 6,824 fire incidents caused 9 civilian deaths, 129 civilian injuries, 208 fire service injuries and an estimated dollar loss of $28,893,853. This translates to 11.9 fires per 1,000 population. The total number of fires reported to the Massachusetts Fire Incident Reporting System increased by 345, or 5.3% from the 6,479 reported in 1990.

Nineteen (19) fire service personnel, 2 engine companies, 2 ladder companies and 3 other vehicles responded to the average Boston fire.

Boston Fire Commissioner Martin Pierce, quoted in the Boston Globe, noted that the 9 civilian fire deaths represents a 23 year low for the City of Boston. Five (5) of these deaths resulted from the careless use and disposal of smoking materials.

The definitions of structure fires and motor vehicle fires are based upon those used by the National Fire Incident Reporting System. Structure fires include Boston situation types 110 - 117. Motor vehicle fires include incident types 130 - 136 and all mobile property types. Each exposure fire is counted as a separate incident. Because of minor variations in the way incidents are categorized, a slight difference exists between the numbers generated by the Boston Fire Department and those generated using the Masachusetts Fire Incident Reporting System. Fire trends and the rank order of causes remain the same under both systems.

STRUCTURE FIRES

The 1,845 structure fires caused 8 civilian deaths, 123 civilian injuries, 194 fire service injuries and an estimated dollar loss of $23,515,728. These incidents represented 27% of Boston's reported fires in 1991. The average estimated dollar loss per structure fire was $12,746. The total number of reported structure fires increased by 438, or 31.1% from the 1,407 reported in 1990.

Twenty-six (26) fire service personnel, 3 engine companies, 2 ladder companies and 3 other vehicles responded to the average Boston structure fire.

More than three-quarters of Boston's structure fires occurred in residential occupancies. In 1991, 58.2% of the structure fires occurred in apartments; 13.6% occurred in one-and two-family homes; 2.7% occurred in restaurants; 2.4% of the structure fires were in offices; 1.9% were in dormitories; and 1.8% were in hospitals or clinics.

MOTOR VEHICLE FIRES

The 1,382 motor vehicle fires caused 1 civilian death, 4 civilian injuries, 7 fire service injuries and an estimated dollar loss of $5,099,830. Motor vehicle fires comprised 20.3% of Boston's reported fires in 1991. The average estimated dollar loss per vehicle fire was $3,690. The total number of motor vehicle fires decreased by 225, or 14%, from the 1,607 reported in 1990.

Nine (9) fire service personnel, 1 engine company and 1 ladder company responded to the average Boston motor vehicle fire.

OUTSIDE AND OTHER FIRES

The 3,597 outside and other fires caused 2 civilian injuries, 7 fire service injuries and an estimated dollar loss of $278,295. Outside and other fires comprised 52.7% of the 6,824 Boston fires reported in 1991. More than one-third of Boston's fires were rubbish or dumpster fires, and almost 16% were brush fires. The total number of outside and other fires increased by 132, or 3.8%, from the 3,465 reported in 1990.

Fifteen (9) fire service personnel, 1 engine company and 1 ladder company responded to the average outside or other fire in Boston.

The types of outside and other fires are listed below.

Situation Found	# of Fires	Civilian Injuries	Fire Service Injuries	Dollar Loss
Rubbish Fires	2,386	0	2	$9,300
Brush Fires	1,090	0	0	0
Outside With Value	107	0	5	267,795
Outside Leak with Fire	5	0	0	0
Unclassified	5	1	0	1,000
Explosion	4	1	0	200

RESIDENTIAL STRUCTURE FIRES

In 1991, 1,393, or 75.6%, of Boston's 1,845 structure fires occurred in residential occupancies. This represents an increase of 409, or 41.6%, from the 984 residential structure fires reported in 1990.

In 1991, residential structure fires caused 7 of Boston's 9 civilian deaths, 111, or 86%, of the 129 civilian injuries and 147, or 71%, of the 208 fire service injuries.

RESIDENTIAL OCCUPANCIES

One thousand and seventy-four (1 074), or 77.1%, of Boston's residential fires occurred in apartments. Four hundred and seventy-seven (477), or 44.4% of the apartment fires occurred in buildings with three to six units; 287, or 26.7% occurred in buildings with more than twenty units; and 261, or 24.3% occurred in buildings with seven to twenty units.

Two hundred and fifty-one (251), or 18%, of Boston's 1,074 residential structure fires occurred in one- or two-family homes; 35, or 2.5% occurred in dormitories; 16, or 1.1%, occurred in hotels or motels; 13, or .9% occurred in rooming houses; and 1 fire occurred in a home hotel. Three (3) fires occurred in other residential occupancies.

DETECTORS

Smoke or heat detectors were present and operated in 830, or 60%, of Boston's residential structure fires. Detectors were present, but did not operate in 253, or 18%, of these incidents. No detectors were present in 159, or 11% of these fires. In 151, or 11%, of the 1,393 residential structure fires, detector status was undetermined or not reported.

Flame damage was confined to the room of origin in 81.8% of the 784 fires in which detectors operated and the extent of flame damage was known.

AREA OF ORIGIN

More than two-fifths (41.6%) of Boston's residential structure fires began in the kitchen; 14.6% began in the bedroom; 6.7% originated in a crawl space; 6.2% started in the living room; 4.9% began on exterior balconies or open porches; and 4.5% started in the hallway.

EQUIPMENT INVOLVED IN IGNITION

No equipment was involved in 46.2% of Boston's residential structure fires in 1991. Stovetops were involved in 17.8% of these incidents. Portable cooking units were involved in 1.5% of these fires and dryers were involved in .9% of these fires. The equipment involved in ignition was undetermined or not reported in 25.5% of these incidents.

FORM OF HEAT OF IGNITION

Heat from gas-fueled equipment provided the heat of ignition in 18.4% of Boston's residential structure fires; properly operating electrical equipment provided the heat in 15.5% of these incidents; cigarettes provided the heat in 10.1% of these fires; matches provided heat in 9% of the residential structure fires. The form of heat of ignition was undetermined or not reported in 18.7% of these fires.

MATERIAL IGNITED

Food or cooking materials were first ignited in 31.2% of Boston's residential structure fires in 1991. Rubbish or waste products were first ignited in 7.5% of these fires; magazines, newspaper or writing paper was first ignited in 6.8% of these fires; and framing or structural members were first ignited in 5.7% of these incidents. The material first ignited was undetermined in 9.9% of the residential structure fires.

IGNITION FACTOR

In 1991, 26.8% of Boston's residential structure fires occurred when stoves or other heat sources were left unattended. More than one-fifth (20.5%) of Boston's residential structure fires were considered arson. For purposes of analysis, a fire is considered arson when the fire department indicates that the ignition factor was incendiary or suspicious. Abandoned material such as cigarettes or ashes caused 13.1% of the residential structure fires; 5% were caused by short circuits or ground faults; and 4.6 resulted from exposure to another fire.

LEADING CAUSES OF RESIDENTIAL STRUCTURE FIRES

Cooking accidents resulted in the largest number of Boston's residential structure fires. Food, or cooking materials were first ignited in 31% of these incidents. In most of these cases, the stove was left unattended.

More than one-fifth of Boston's residential structure fires were considered incendiary or suspicious. More than 10% of the residential structure fires resulted from the careless use or disposal of smoking materials. Short circuits or ground faults, exposure to other fires, and dryer problems were other leading causes of these incidents.

WHEN

May was the peak month for fire incidents in Boston in 1991. June ranked second and April ranked third. January had the fewest fires. The second smallest number of fires occurred in February.

Sunday was the peak day for fires in 1991. Friday ranked second and Thursday ranked third. The smallest number of fires occurred on Wednesday. Tuesday had the second smallest number of fires.

The period between 8:00 p.m. and midnight was the peak time interval for fires in Boston in 1991. The period between 4:00 p.m and 8:00 p.m. ranked second. The period from noon to 4:00 p.m. ranked third. The smallest number of fires occurred between 4:00 a.m. and 8:00 a.m. The period from 8:00 a.m. to noon had the second smallest number of fires.

STRUCTURE FIRES

December was the peak month for structure fires in Boston in 1991. October ranked second and September ranked third. The fewest structure fires occurred in June. January had the second smallest number of these incidents.

Sunday was the peak day for structure fires in Boston. Tuesday ranked second and Saturday ranked third. The smallest number of fires occurred on Thursday.

The period from 4:00 p.m. to 8:00 p.m. was the peak time period for structure fires in Boston in 1991. This is the time when meals are prepared, and is consistent with cooking being the leading cause of residential structure fires. The period from 8:00 p.m. to midnight ranked second. The period from noon to 4:00 p.m. ranked third. The fewest structure fires occurred between 4:00 a.m. and 8:00 a.m. The second smallest number of these incidents occurred between midnight and 4:00 a.m.

MOTOR VEHICLE FIRES

February was the peak month for motor vehicle fires in Boston in 1991. March ranked second and December ranked third. The smallest number of motor vehicle fires occurred in August.

Thursday was the peak day for motor vehicle fires. Friday ranked second and Tuesday ranked third. The fewest fires occurred on Monday.

The peak period for motor vehicle fires in Boston was from 8:00 p.m. to midnight. The period from midnight to 4:00 a.m. ranked second, and the period from 4:00 p.m. to 8:00 p.m. ranked third. Arson was the leading cause of motor vehicle fires, and arson fires are more likely to occur at night. The period between 4:00 a.m. and 8:00 a.m. had the fewest motor vehicle fires.

OUTSIDE AND OTHER FIRES

May was the peak month for Boston's outside and other fires in 1991. July ranked second and June ranked third. The smallest number of outside and other fires occurred in December. January, had the second lowest frequency of these incidents.

Sunday was the peak day for outside and other incidents. Friday ranked second, and Saturday ranked third. Wednesday had the fewest outside and other fires. Tuesday had the second smallest number of these fires.

The peak time period for outside and other fires was from 8:00 p.m. to midnight. The period from 4:00 p.m. to 8:00 p.m. ranked second, and the period from noon to 4:00 p.m. ranked third. The smallest number of outside and other fires occurred between midnight and 4:00 a.m.

MOTOR VEHICLE FIRES

In 1991, the 1,382 motor vehicle fires caused an estimated dollar loss of $5,099,830. Seven hundred thirty-two (732), or 53%, of these fires were considered incendiary or suspicious. The total number of motor vehicle fires dropped by 67% from a high of 4,206 motor vehicle fires in 1986. The number of motor vehicle arsons declined 76% during the same five-year period.

Fuel spills or accidental releases caused 9.9% of Boston's motor vehicle fires in 1991; 9.6% resulted from short circuits or ground faults; 12.2% resulted from other accidental causes; and the cause was undetermined or not reported in 15.4% of the motor vehicle fires.

In 1991, 1,382, or 82%, of the motor vehicles that burned in Boston were automobiles. Five hundred and ninety-nine (599), or 53%, of the automobile fires were considered incendiary or suspicious.

ARSON FIRES

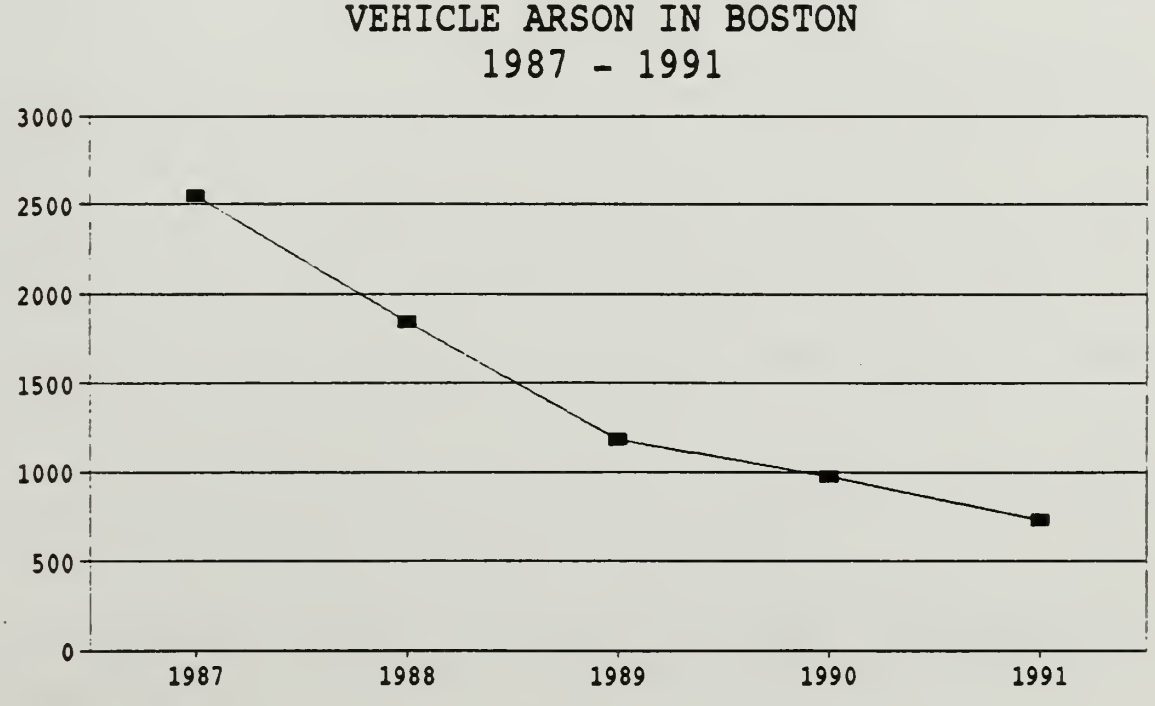
In 1991, 1,227, or 18%, of the 6,824 Boston fires were considered incendiary or suspicious, or, for purposes of this analysis, arson. The total number of reported arson fires decreased by 192, or 13.5%, from the 1,419 reported in 1990.

Arson fires in 1991 caused 2 civilian deaths, 33 civilian injuries, 111 fire service injuries, and an estimated dollar loss of $14,660,245. The 18% of Boston fires attributed to arson caused more than half of the total dollar loss.

MOTOR VEHICLE ARSON

In 1991, 59.7% of Boston's arsons were motor vehicle arsons. The 732 motor vehicle arsons resulted in 1 civilian death, 3 fire service injuries and an estimated dollar loss of $386,625. Fifty-three per cent (53%) of Boston's motor vehicle fires were considered suspicious or incendiary. The total number of reported motor vehicle arsons decreased by 242, or 25%, from the 974 reported in 1990.

Motor vehicle arson was more likely to occur at night or in the late afternoon. More than 35% of these incidents occurred between 8:00 p.m. and midnight; 32.4% occurred between midnight and 4:00 a.m. and 13.7% occurred between 4:00 p.m. and 8:00 p.m.



STRUCTURE ARSON

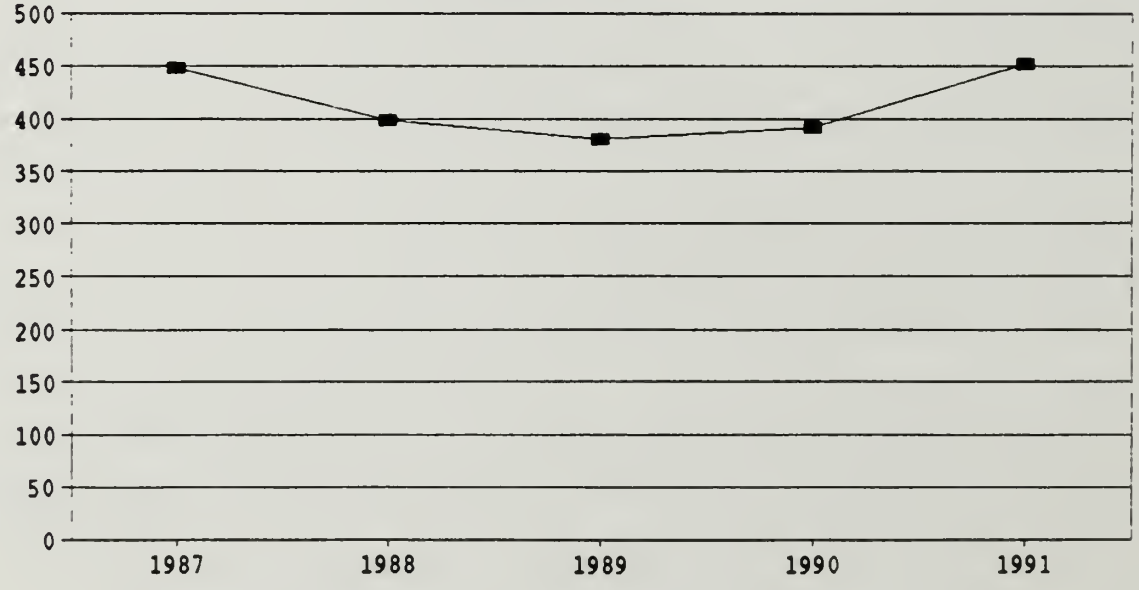
The 452 structure arsons caused 1 civilian death, 31 civilian injuries, 106 fire service injuries and an estimated dollar loss of $11,211,335. More than one-third (36.8%) of Boston's arsons in 1991 were structure arsons. Arson was indicated as the cause of 24.5% of the structure fires. Although structure arsons comprised less than 7% of Boston's fires, 51% of the fire service injuries occurred at structure arsons.

The total number of reported structure arsons increased by 61, or 15.6%, from the 391 reported in 1991.

More than 63% of Boston's 452 structure arsons occurred in residential occupancies. In 1991, 201, or 44.5%, of the structure arsons occurred in apartments. Sixty-four (64), or 14.2% occurred in one-or two-family homes. Four per cent (4%) of the structure arsons occurred in schools, and another 4% occurred in occupancies for the physically restrained such as prison cells or police stations.

Structure arson, like motor vehicle arson, was more likely to occur at night or in the late afternoon. More than 26% of these incidents occurred between 8:00 p.m. and midnight; 20.1% occurred between midnight and 4:00 a.m. and 19.2% occurred between 4:00 p.m. and 8:00 p.m.

STRUCTURE ARSON IN BOSTON
1987 - 1991



OUTSIDE AND OTHER ARSON

The 43 outside and other arsons accounted for the remaining 3.5% of Boston's arson fires. These 43 arsons resulted in 2 civilian injuries, 2 fire service injuries and an estimated dollar loss of $62,285

FATAL FIRES

On Thursday, January 10, a fire in a 4-family house resulted in the death of a 98 year old woman. The fire started when the victim's smoking ignited her blanket. No smoke detectors were present.

On Tuesday, February 12, an apartment fire killed a 69 year old woman. The victim's abandoned smoking materials ignited the upholstered furniture, and subsequently her clothing as she dozed in the living room. Hard wired detectors were present, but did not operate.

On Tuesday, February 26, a 35 year old man died in an apartment fire of undetermined origin. The victim was under the influence of alcohol, and was unable to escape when his clothing ignited. Hard-wired detectors were present and operated in this fire.

On Saturday, March 16, a 20 year old man died as a result of an incendiary automobile fire.

On Monday, May 13, a wheelchair-bound 48 year old woman's clothing ignited while she smoked in her apartment. She was unable to escape the fire. Hard-wired smoke detectors were present, but their performance was unknown.

On Monday, September 2, an apartment fire started by a hot plate used too close to newspapers resulted in the death of an 88 year old woman. Smoke detectors did operate in this fire.

On Friday, November 22, a 28 year old man died as a result of a fire he deliberately set in an unoccupied single-family home. No smoke detectors were present.

On Sunday, December 1, a 24 year old man was killed by an apartment fire of undetermined origin. Battery-operated smoke detectors were present, but did not operate.

On Monday, December 16, a 48 year old man died as a result of an apartment fire caused by smoking in bed. Battery-operated smoke detectors were present in the building, but no operation was reported.

CONCLUSIONS

The total number of fires reported in Boston increased by 5% from 1990 to 1991. This is the first increase in five years. while reported structure fires increased by 31% and outside and other fires increased by 3.8%, motor vehicle fires actually decreased by 14%.

Although the total number of arson fires continued to decline from 1990 to 1991, arson continued to be the leading fire problem in Boston. Arsonists caused 53% of all motor vehicle fires, 24.5% of all structure fires, and 20.5% of all residential structure fires. The decline in arson was due almost totally to the 25% drop in motor vehicle fires. Structure arson actually increased by 15.6%, marking the second year in a row in which the frequency of structure arson increased.

The number of reported residential structure fires increased by 42% from 1990 to 1991. Many of these fires were kept minor.

More than 26% of Boston's residential structure fires were caused by unattended cooking. Arson, the careless use and disposal of smoking materials, short circuits or ground faults, exposure to other fires, and problems with dryers were the other leading causes of these incidents.

Smoke or heat detectors operated in two-thirds of these fires (excluding those in which detector performance was undetermined or not classified.) Flame damage was confined to the room of origin in 82% of the incidents in which smoke detectors operated and the extent of flame damage was known.

BOSTON **FDID: 25035** **POPULATION: 574,283**

TOTAL FIRES: **6,824** **$28,893,853**

11.9 Fires/1,000 Population

Structure Fires:	1,845	27.0%	$23,515,728
Vehicle Fires	1,382	20.3%	5,099,830
Other Fires	3,597	52.7%	278,295

Casualties

9 fatal fires — 1.31 Civilian Deaths/1,000 Fires
9 Civilian Deaths — .16 Civilian Deaths/10,000 Population

Injuries: 129 Civilians 208 Fire Service

RESIDENTIAL STRUCTURE FIRES

TOTAL: 1,393

Apartments:	1,074 (77.1%)	1- & 2-Family Homes:	251 (18.0%)
Dormitories:	35 (2.5%)	Hotels, Motels:	16 (1.1%)
Rooming Houses:	13 (0.9%)	Home Hotel:	1 (0.07%)
Other:	3 (0.2%)		

Deaths: 7 Civilians
Injuries: 111 Civilians 147 Fire Service

DETECTORS

None present: 159 (11.4%)
Present and Operated: 830 (59.6%)
Present, but did not operate: 253 (18.2%)
Unknown: 151 (10.8%)

AREA OF ORIGIN		EQUIPMENT		FORM OF HEAT OF IGNITION	
Kitchen	41.6%	None	46.2%	Heat/Gas Fueled Eq	18.4%
Bedroom	14.6%	Stovetop	17.8%	Properly Op Elec Eq	15.5%
Crawl Space	6.7%	Port. Cook.	1.5%	Cigarette	10.1%
Living Room	6.2%	Dryer	0.9%	Match	9.0%
Open Porch	4.9%	Unknown	25.5%	Unknown	18.7%
Hallway	4.5%				

MATERIAL IGNITED		IGNITION FACTOR	
Cooking Materials	31.2%	Unattended	26.8%
Rubbish, Waste	7.5%	Arson	20.5%
Magazine, Newspaper	6.8%	Abandoned Material	13.1%
Structural Member	5.7%	Short Circuit/Ground Fault	5.0%
Unknown	9.9%	Property Too Close	4.6%

MONTH	TOTAL FIRES	STRUCTURE FIRES	VEHICLE FIRES	OTHER FIRES
JANUARY	409	108	120	181
FEBRUARY	431	111	128	192
MARCH	497	127	127	243
APRIL	628	111	111	406
MAY	777	171	107	499
JUNE	676	103	119	454
JULY	711	122	119	470
AUGUST	525	167	104	254
SEPTEMBER	554	200	106	248
OCTOBER	559	201	110	248
NOVEMBER	516	172	108	236
DECEMBER	541	252	123	166

DAY	TOTAL FIRES	STRUCTURE FIRES	VEHICLE FIRES	OTHER FIRES
SUNDAY	1058	294	192	572
MONDAY	953	249	181	523
TUESDAY	961	283	195	483
WEDNESDAY	880	261	188	431
THURSDAY	985	247	232	506
FRIDAY	1010	253	202	555
SATURDAY	977	258	192	527

TIME	TOTAL FIRES	STRUCTURE FIRES	VEHICLE FIRES	OTHER FIRES
0001 - 0400	1055	253	324	478
0401 - 0800	436	168	119	149
0801 - 1200	743	314	123	306
1201 - 1600	1253	341	189	723
1601 - 2000	1613	393	263	957
2001 - 2400	1724	376	364	984

MOTOR VEHICLE FIRES

TOTAL: 1,382

Automobiles: 1,136 (82.2%)
599 (52.7%) of the automobile fires attributed to arson

ARSON FIRES

TOTAL ARSONS: 1,227 **2.13 Arson Fires/1,000 Population**

	#	% TSF	% ARSON	DOLLAR LOSS
Structures:	452	24.5%	36.8%	$11,211,335
Vehicles:	732	53.0%	59.7%	3,386,625
Other Arsons:	43	1.2%	3.5%	62,285

Estimated Dollar Loss: $14,660,245

2 Civilian Deaths

33 Civilian Injuries 111 Fire Service Injuries

PEAK TIMES FOR

STRUCTURE ARSON

TIME PERIOD	#	%
1. 2001 - 2400	118	26.1%
2. 0001 - 0400	91	20.1%
3. 1601 - 2000	87	19.2%

MOTOR VEHICLE ARSON

TIME PERIOD	#	%
1. 2001 - 2400	259	35.4%
2. 0001 - 0400	237	32.4%
3. 1601 - 2000	100	13.7%

PEAK FIXED PROPERTY USES FOR STRUCTURE ARSONS	**#**	**%**
1. Apartments	201	44.5%
2. One- & Two-Family Homes	64	14.2%
3. Non-residential Schools	18	4.0%
3. Care Of The Physically Restrained	15	3.3%

BOSTON FIRES FROM 1987 TO 1991

YEAR	TOTAL FIRES	STRUC FIRES	VEH FIRES	OTHER FIRES	TOTAL ARSONS	STRUC ARSONS	VEH ARSONS	OTHER ARSONS
1987	9,863	1,595	3,635	4,633	3,056	448	2,555	53
1988	8,325	1,557	2,806	3,962	2,280	399	1,847	34
1989	6,749	1,436	1,956	3,357	1,618	381	1,184	53
1990	6,479	1,407	1,607	3,465	1,419	391	974	54
1991	6,824	1,845	1,382	3,597	1,227	452	732	43

The Commonwealth of Massachusetts
Department of Public Safety
Office of the State Fire Marshal
1010 Commonwealth Avenue
Boston, Massachusetts 02215

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GOVERNOR

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STATE FIRE MARSHAL

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CHELSEA FIRE DATA ANALYSIS

1991

Prepared by: The Suffolk County Arson Prevention Program
Office of the State Fire Marshal
1010 Commonwealth Avenue
Boston, MA 02215

Data Source: 1991 Massachusetts Fire Incident Reporting System

ANALYSIS OF CHELSEA'S FIRES IN 1991

In 1991, Chelsea's 714 fires caused 11 civilian injuries, 121 fire service injuries and an estimated dollar loss of $2,056,485. This translates to 24.9 fires per 1,000 population.

Eight (8) fire service personnel, 2 engine companies, 1 ladder company and 1 other vehicle responded to the average Chelsea fire in 1991. An average of 7 staff hours was spent at each fire incident.

The total number of fires reported to the Massachusetts Fire Incident Reporting System increased by almost 350% since 1990. A very large percentage of this increase is attributable to the chief's new policy of documenting all fires, including fires in uninsured properties that would have gone unreported in the past.

STRUCTURE FIRES

The 461 structure fires caused 6 civilian injuries, 112 fire service injuries and an estimated dollar loss of $1,813,405. These fires represented 64.6% of Chelsea's reported fires in 1991. The average estimated dollar loss per structure fire was $3,993. Mutual aid was received in 57, or 12.4%, of these fires. The total number of reported structure fires increased 7.5 times from the 54 reported in 1990.

Ten (10) fire service personnel, 1 engine company, 1 ladder company and 1 other vehicle responded to the average Chelsea structure fire. An average of 9 staff hours was spent at each incident.

MOTOR VEHICLE FIRES

The 84 motor vehicle fires caused 2 fire service injuries and an estimated dollar loss of $235,450. Motor vehicle fires comprised 11.8% of Chelsea's reported fires in 1991. The average estimated dollar loss per vehicle fire was $2,803. Mutual aid was received in 6, or 7%, of these fires. The total number of motor vehicle fires decreased by 16 from the 100 reported in 1990.

Eight (8) fire service personnel, 1 engine company, 1 ladder company and 1 other vehicle responded to the average Chelsea motor vehicle fire. An average of 3 staff hours was spent at each of these fires.

OUTSIDE AND OTHER FIRES

The 169 outside and other fires caused 5 civilian injuries, 7 fire service injuries and an estimated dollar loss of $7,630. Outside and other fires comprised 23.7% of the 714 Chelsea fires reported in 1991. The 169 outside and other fires included: 91 rubbish fires; 70 brush fires; 4 explosions; 3 outside fires of value; and 1 unclassified fire. Only 5 outside and other fires were reported in 1990. Mutual aid was received in 15, or 9%, of these fires in 1991. Almost one-third (32%) of the outside and other fires were caused by children playing with matches or lighters; 27% of these fires resulted from the careless use or disposal of smoking materials; and 26% were considered incendiary or suspicious. An average of 4 staff house was spent at each of these fires.

RESIDENTIAL STRUCTURE FIRES

In 1991, 418, or 91%, of Chelsea's 461 structure fires occurred in residential occupancies. This represents a tenfold increase from the 41 residential fires reported in 1990.

In 1991, residential structure fires caused 4 civilian injuries and 48 fire service injuries.

RESIDENTIAL OCCUPANCIES

Three hundred and seventy-one (371), or 89%, of Chelsea's residential fires occurred in apartments; 39, or 9%, occurred in one- or two-family homes; 5, or 1.2%, occurred in hotels or motels; 2, or .5% occurred in rooming houses; and 1 fire occurred in a dormitory.

DETECTORS

Smoke or heat detectors were present and operated in 292, or 70%, of Chelsea's residential structure fires. In 96% of these incidents, the flame damage did not extend beyond the room of origin. Clearly, the early warning provided by the smoke detector made it possible to prevent more serious damage in most cases.

Detectors were present, but did not operate in 30, or 7%, of the residential structure fires. (In 13, or 3.1% of these incidents, the fire was considered too small to activate the detector.) No detectors were present in 22, or 5.3% of these fires. In 68, or 16.3%, of the 418 residential structure fires, detector status was undetermined or not reported.

AREA OF ORIGIN

More than two-thirds (67.5%) of Chelsea's residential structure fires began in the kitchen; 11.5% began in the heating equipment room; 3.1% originated on an exterior stairway; and 2.9% started in the bedroom.

EQUIPMENT INVOLVED IN IGNITION

Stovetops were involved in 56.2% of Chelsea's residential structure fires in 1991. No equipment was involved in 7.1% of these incidents. Central heating units were involved in 6.9% of these fires and heating systems which could not be classified further were involved in 4.8% of these ignitions.

FORM OF HEAT OF IGNITION

Properly operating electrical equipment provided the heat of ignition in 39.7% of Chelsea's residential structure fires. Unclassified hot objects provided the heat of ignition in 11.1% of these incidents; heat from liquid fueled equipment provided the heat in 10.8% of these fires; and in 7.9% of these ignitions, the heat was provided by open fire or flame.

MATERIAL IGNITED

Food or cooking materials were first ignited in 61.7% of Chelsea's residential structure fires in 1991. Fuel was first ignited in 14.6% of these fires; electrical wire or cable insulation was first ignited in 3.3% of these fires; rubbish or waste products were first ignited in 2.6% of these incidents; and multiple materials were ignited simultaneously in 2.6% of these fires.

IGNITION FACTOR

In 62% of Chelsea's residential structure fires, stoves or other heat sources were left unattended; 8.1% of the residential structure fires were caused by backfires; automatic control failures caused 3.6% of these incidents; and arson was indicated as the cause of 3.6% of these fires. For purposes of analysis, a fire is considered arson when the fire department indicates that the ignition factor was incendiary or suspicious.

LEADING CAUSES OF RESIDENTIAL STRUCTURE FIRES

More than 60% of Chelsea's residential structure fires were caused by unattended cooking. Problems with central heating units and arson were other leading causes.

WHEN

December was the peak month for fire incidents in Chelsea in 1991. January ranked second and August ranked third. February and June had the smallest number of fires.

Sunday was the peak day for fires in 1991. Tuesday ranked second and Monday ranked third. The smallest number of fires occurred on Wednesday. Saturday had the second smallest number of fires.

The period between 4:00 p.m. and 8:00 p.m. was the peak time interval for fires in Chelsea in 1991. The period between 8:00 p.m. and midnight followed closely. The period from noon to 4:00 p.m. ranked third. The smallest number of fires occurred between 4:00 a.m. and 8:00 a.m. The period from midnight to 4:00 a.m. had the second smallest number of fires.

STRUCTURE FIRES

January was the peak month for structure fires in Chelsea in 1991. December ranked second and November ranked third. The fewest structure fires occurred in July. August had the second smallest number of these incidents.

Sunday was the peak day for structure fires in Chelsea. Monday ranked second and Saturday ranked third. The smallest number of fires occurred on Wednesday.

The period from 4:00 p.m. to 8:00 p.m. was the peak time period for structure fires in Chelsea in 1991. This is the time when meals are prepared, and is consistent with cooking being the leading cause of structure fires. The period from noon to 4:00 p.m. ranked second. The period from 8:00 p.m. to midnight ranked third. The fewest structure fires occurred between 4:00 a.m. and 8:00 a.m. The second smallest number of these incidents occurred between midnight and 4:00 a.m.

MOTOR VEHICLE FIRES

October was the peak month for motor vehicle fires in Chelsea in 1991. December ranked second and July ranked third. The smallest number of motor vehicle fires occurred in June.

Sunday was the peak day for motor vehicle fires. Tuesday ranked second and Friday ranked third. The fewest fires occurred on Monday and Wednesday.

The peak period for motor vehicle fires in Chelsea was from 8:00 p.m. to midnight. The period from midnight to 4:00 a.m. ranked second, and the period from 4:00 p.m. to 8:00 p.m. ranked third. Arson was the leading cause of motor vehicle fires, and arson fires are more likely to occur at night. The period between 8:00 a.m. and noon had the fewest motor vehicle fires.

OUTSIDE AND OTHER FIRES

July was the peak month for Chelsea's outside and other fires in 1991. April and August ranked second. The smallest number of outside and other fires occurred in January. February, October, November, and December had the second lowest frequency of these incidents.

Tuesday was the peak day for outside and other incidents. Thursday ranked second, and Sunday ranked third. The fewest outside and other fires occurred on Saturday. Friday had the second smallest number of these fires.

The peak time period for outside and other fires was from 8:00 p.m. to midnight. The period from 4:00 p.m. to 8:00 p.m. ranked second, and the period from noon to 4:00 p.m. ranked third. The smallest number of outside and other fires occurred between 4:00 a.m. and 8:00 a.m.

MOTOR VEHICLE FIRES

In 1991, the 84 motor vehicle fires caused an estimated dollar loss of $235,450. This represents a 39% drop from a high of 138 motor vehicle fires in 1986.

Forty-three, or 57%, of the 76 identified owners of burned motor vehicles did not live in Chelsea. Twenty-two (22), or 63%, of the 35 identified owners of motor vehicles burned in incendiary or suspicious fires were from out of town.

Seventy-three (73), or 87%, of the motor vehicle fires that burned in Chelsea were automobiles. Thirty-six (36), or 49%, of the automobile fires were considered incendiary or suspicious.

ARSON FIRES

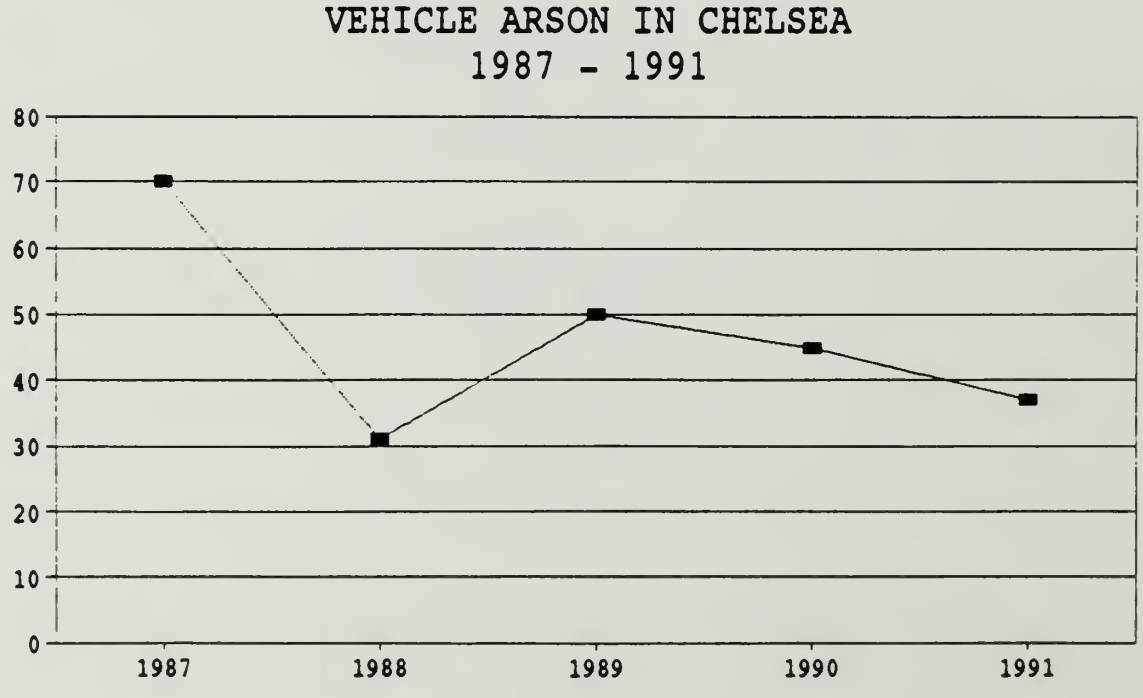
In 1991, 108, or 15%, of the 714 Chelsea fires were considered incendiary or suspicious, or, for purposes of this analysis, arson. The total number of reported arson fires increased by 44, or 69%, form the 64 reported in 1990.

Arson fires in 1991 caused 1 civilian injury, 55 fire service injuries, and an estimated dollar loss of $1,042,555. The 15% of Chelsea fires attributed to arson caused more than half of the total dollar loss.

MOTOR VEHICLE ARSON

In 1991, 34% of Chelsea's arsons were motor vehicle arsons. The 37 motor vehicle arsons resulted in 1 fire service injury and an estimated dollar loss of $159,750. Forty-four per cent (44%) of Chelsea's motor vehicle fires were considered suspicious or incendiary. The total number of reported motor vehicle arsons decreased by 8, or 18%, from the 45 reported in 1990.

More than three-quarters of Chelsea's motor vehicle arsons occurred between the hours of 8:00 p.m. and 4:00 a.m. Fifty-nine per cent (59%) of the motor vehicle arsons occurred between 8:00 p.m. and midnight and 19% occurred between midnight and 4:00 a.m.

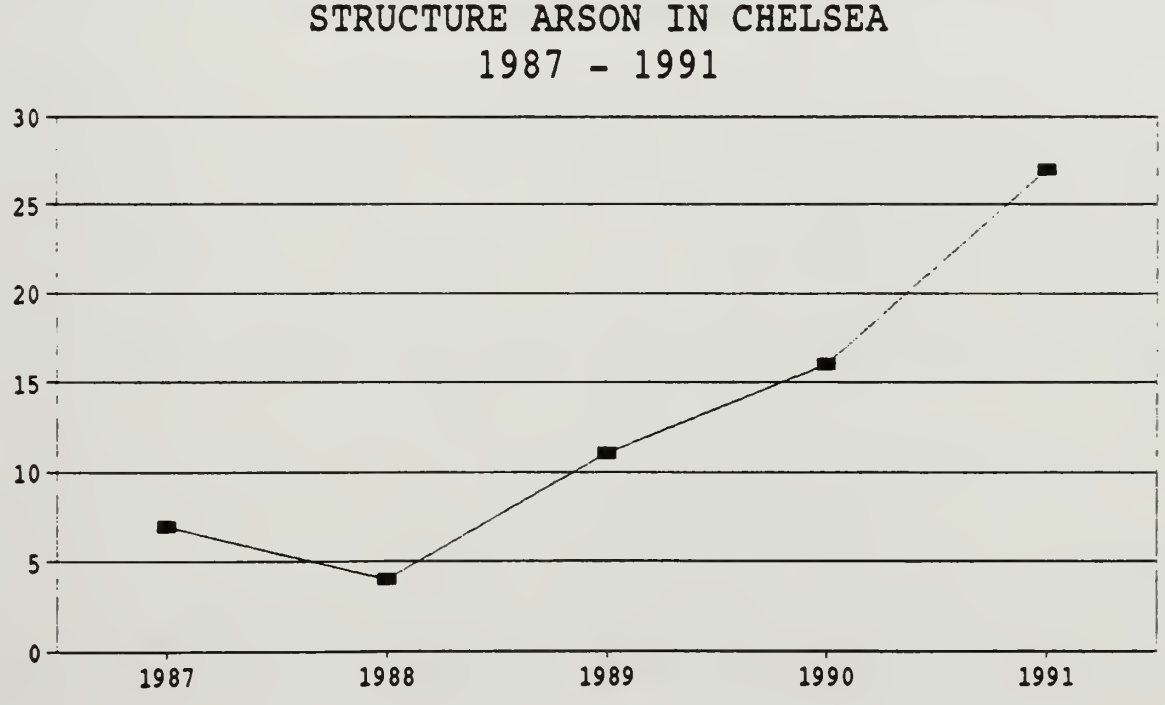


STRUCTURE ARSON

The 27 structure arsons caused 54 fire service injuries and an estimated dollar loss of $880,275. One-quarter of Chelsea's arsons in 1991 were structure arsons. Arson was indicated as the cause of 6% of the structure fires. Although structure arsons comprised less than 4% of Chelsea's fires, 44% of the fire service injuries occurred at structure arsons.

The total number of reported structure arsons increased by 11, or 69%, from the 16 reported in 1991.

Thirty-seven (37) per cent of the structure arsons in Chelsea occurred in apartments and 16% occurred in one- or two-family homes. Thirty-seven per cent (37%) of the structure arsons occurred between 8:00 p.m. and midnight; 26% occurred between 4:00 p.m. and 8:00 p.m.; and 11% occurred between midnight and 4:00 a.m.



OUTSIDE AND OTHER ARSON

Forty-four (44), or 26%, of the outside and other fires were considered arsons. These incidents resulted in 1 civilian injury and an estimated dollar loss of $2,530. Outside and other arsons accounted for 41% of Chelsea's reported arson fires in 1991. The 44 outside and other arsons include: 30 rubbish fires; 12 brush fires; and 2 explosions. Only 3 outside and other arsons were reported in 1990, but the change in policy on reporting no-loss fires can account for much of the increase.

Twenty-seven per cent (27%) of Chelsea's outside and other arsons occurred between 8:00 p.m. and midnight; 20% occurred between noon and 4:00 p.m. and 18% occurred between 4:00 p.m. and 8:00 p.m.

CONCLUSIONS

The dismal economy of 1991 made it a difficult year for most communities in Massachusetts. This was particularly true for the City of Chelsea. Because of severe financial straits, the city was placed into receivership. A new chief implemented a policy of reporting all fire incidents in order to obtain a more complete picture of fire department activity. This change in policy resulted in a dramatic increase in the number of all fires reported.

The number of reported residential structure fires increased tenfold from 1990 to 1991. Many of these fires were kept to the room of origin. Smoke or heat detectors operated in 85% of these fires (excluding those in which detector performance was undetermined or not classified.) In 96% of the fires with working detectors, flame damage did not extend beyond the room of origin.

More than 60% of Chelsea's residential structure fires were caused by unattended cooking. Problems with central heating units and arson were other leading causes.

Almost one-third of Chelsea's outside and other fires were caused by children playing with fire.

Motor vehicle fires and motor vehicle arsons continued to decline in frequency.

Structure arson fires are particularly dangerous for firefighters. These arsons were responsible for 44% of the fire service injuries in 1991.

CHELSEA **FDID: 25057** **POPULATION: 28,710**

TOTAL FIRES: **714** **$2,056,485**

24.9 Fires/1,000 Population

Structure Fires:	461	64.6%	$1,813,405
Vehicle Fires	84	11.8%	235,450
Other Fires	169	23.7%	7,630

Casualties

No Fatal Fires

Injuries: 11 Civilians 121 Fire Service

RESIDENTIAL STRUCTURE FIRES

TOTAL: 418

Apartments:	371 (88.8%)	1- & 2-Family Homes:	39 (9.3%)
Hotels, Motels:	5 (1.2%)	Rooming Houses:	2 (0.5%)
Dormitories:	1 (0.2%)		

Deaths: 0 Injuries: 4 Civilians 48 Fire Service

DETECTORS

None present:	22 (5.3%)	Present and Operated:	292 (69.9%)
Present, but did not operate:	30 (7.2%)	Unknown:	68 (16.3%)

AREA OF ORIGIN		EQUIPMENT		FORM OF HEAT OF IGNITION	
Kitchen	67.5%	Stovetop	56.2%	Prop Op Elec Equip	39.7%
Heat Eq Room	11.5%	None	7.1%	Unclassified Hot Obj	11.1%
Ext Stairway	3.1%	Cntrl Heat	6.9%	Heat/Liq Fueled Eq	10.8%
Bedroom	2.9%	Unc Ht Sys	4.8%	Open Fire	7.9%
Unknown	3.8%	Unknown	5.7%	Unknown	9.1%

MATERIAL IGNITED		IGNITION FACTOR	
Cooking Materials	61.7%	Unattended	62.0%
Fuel	14.6%	Backfire	8.1%
Elec Wire, Cable Insul	3.3%	Automatic Control Failure	3.6%
Rubbish, Waste Products	2.6%	Arson	3.6%
Multiple	2.6%	Unknown	7.2%
Unknown	4.1%		

MONTH	TOTAL FIRES	STRUCTURE FIRES	VEHICLE FIRES	OTHER FIRES
JANUARY	68	56	6	6
FEBRUARY	53	40	5	8
MARCH	62	44	5	13
APRIL	63	36	5	22
MAY	62	39	2	21
JUNE	53	36	5	12
JULY	54	19	10	25
AUGUST	64	36	6	22
SEPTEMBER	55	34	5	16
OCTOBER	49	27	14	8
NOVEMBER	61	45	8	8
DECEMBER	70	49	13	8

DAY	TOTAL FIRES	STRUCTURE FIRES	VEHICLE FIRES	OTHER FIRES
SUNDAY	128	79	22	27
MONDAY	104	76	8	20
TUESDAY	111	63	17	31
WEDNESDAY	73	40	8	25
THURSDAY	102	64	9	29
FRIDAY	101	71	11	19
SATURDAY	95	68	9	18

TIME	TOTAL FIRES	STRUCTURE FIRES	VEHICLE FIRES	OTHER FIRES
0001 - 0400	63	28	15	20
0401 - 0800	41	21	10	10
0801 - 1200	100	83	3	14
1201 - 1600	159	116	10	33
1601 - 2000	176	123	12	41
2001 - 2400	175	90	34	51

MOTOR VEHICLE FIRES

TOTAL: 84
43 (57%) of the 76 identified owners lived out of town.
22 (63%) of the 35 identified owners of cars burned in motor vehicle arsons were lived out of town.

Automobiles: 73 (87%)
36 (49%) of the automobile fires attributed to arson

ARSON FIRES

TOTAL ARSONS: 108 **3.76 Arson Fires/1,000 Population**

	#	% TSF	% ARSON	DOLLAR LOSS
Structures:	27	6%	25%	$880,275
Vehicles:	37	44%	34%	159,750
Other Arsons:	44	26%	41%	2,530

Estimated Dollar Loss: $1,042,555

No Fatal Arson Fires

2 Civilian Injuries 55 Fire Service Injuries

PEAK TIMES FOR STRUCTURE ARSON

TIME PERIOD	#	%
1. 2001 - 2400	10	37%
2. 1601 - 2000	7	26%
3. 0001 - 0400	4	11%

PEAK TIMES FOR MOTOR VEHICLE ARSON

TIME PERIOD	#	%
1. 2001 - 2400	22	59%
2. 0001 - 0400	7	19%
3. 1601 - 2000	4	11%

OTHER ARSON

TIME PERIOD	#	%
1. 2001 - 2400	12	27%
2. 1201 - 1600	9	20%
3. 1601 - 2000	8	18%

PEAK FIXED PROPERTY USES FOR STRUCTURE ARSONS	#	%
1. Apartments	10	37%
2. One- & Two-Family Homes	5	16%

CHELSEA FIRES FROM 1987 TO 1991

YEAR	TOTAL FIRES	STRUC FIRES	VEH FIRES	OTHER FIRES	TOTAL ARSONS	STRUC ARSONS	VEH ARSONS	OTHER ARSONS
1987	169	43	124	2	77	7	70	0
1988	121	46	74	1	35	4	31	0
1989	158	53	105	0	61	11	50	0
1990	159	54	100	5	64	16	45	3
1991	714	461	84	169	108	27	37	44

The Commonwealth of Massachusetts
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REVERE FIRE DATA ANALYSIS

1991

Prepared by: The Suffolk County Arson Prevention Program
Office of the State Fire Marshal
1010 Commonwealth Avenue
Boston, MA 02215

Data Source: 1991 Massachusetts Fire Incident Reporting System

ANALYSIS OF REVERE'S FIRES IN 1991

In 1991, Revere's 207 fires caused 6 civilian injuries, 6 fire service injuries and an estimated dollar loss of $1,493,850. This translates to 4.8 fires per 1,000 population. The total number of fires reported to the Massachusetts Fire Incident Reporting System increased by 7, or 3.5%, from the 200 reported in 1990.

Ten (10) fire service personnel, 2 engine companies, 1 ladder company and 1 other vehicle responded to the average Revere fire in 1991. An average of 8 staff hours was spent at each fire incident.

STRUCTURE FIRES

The 96 structure fires caused 4 civilian injuries, 6 fire service injuries and an estimated dollar loss of $1,183,850. These fires represented 46.4% of Revere's reported fires in 1991. The average estimated dollar loss per structure fire was $12,331. Mutual aid was received in 31, or 32%, of these fires. The total number of reported structure fires decreased by 17, or 15%, from the 113 reported in 1990.

Fourteen (14) fire service personnel, 3 engine companies, 1 ladder company and 1 other vehicle responded to the average Revere structure fire. An average of 12 staff hours was spent at each incident.

MOTOR VEHICLE FIRES

The 95 motor vehicle fires caused 2 civilian injuries and an estimated dollar loss of $205,600. Motor vehicle fires comprised 45.9% of Revere's reported fires in 1991. The average estimated dollar loss per vehicle fire was $2,164. Mutual aid was received in 15, or 16%, of these fires. The total number of motor vehicle fires increased by 15, or 19%, from the 80 reported in 1990.

Six (6) fire service personnel, 1 engine company, 1 ladder company and 1 other vehicle responded to the average Revere motor vehicle fire. An average of 4 staff hours was spent at each of these fires.

OUTSIDE AND OTHER FIRES

The 16 outside and other fires reported to MFIRS caused an estimated dollar loss of $104,400. These 16 fires include: 6 rubbish fires; 5 outside fires with dollar loss; 3 explosions; 1 brush fire; and 1 outside spill or leak with ensuing fire. Outside and other fires comprised 7.7% of the 207 Revere fires reported in 1991. Only 7 outside and other fires were reported in 1990. Mutual aid was received in 3, or 19%, of these fires in 1991.

Nine (9) fire service personnel, 2 engine companies, 1 ladder company and 1 other vehicle responded to the average outside or other fire in Revere. An average of 6 staff hours was spent at each of these fires.

RESIDENTIAL STRUCTURE FIRES

In 1991, 77, or 80%, of Revere's 96 structure fires occurred in residential occupancies. This represents a decrease of 19, or 20%, from the 96 residential fires reported in 1990.

In 1991, residential structure fires caused 4 civilian injuries and 5 fire service injuries.

RESIDENTIAL OCCUPANCIES

Thirty-eight (38), or 49%, of Revere's residential fires occurred in one- or two-family homes; 36, or 47%, occurred in apartments; 2, or 3% occurred in rooming houses; and 1 fire occurred in an unclassified residential occupancy.

DETECTORS

Smoke or heat detectors were present and operated in 32, or 42%, of Revere's residential structure fires. In 84% of these incidents, the flame damage did not extend beyond the room of origin. Clearly, the early warning provided by the smoke detector made it possible to prevent more serious damage in most cases.

Detectors were present, but did not operate in 24, or 31%, of the residential structure fires. No detectors were present in 16, or 21% of these fires. In 5, or 6%, of the 77 residential structure fires, detector status was undetermined or not reported.

AREA OF ORIGIN

Thirty per cent (3%) of Revere's residential structure fires began in the kitchen; 16% began in the bedroom; 9% originated in the living room; and 6% started in the crawl space.

EQUIPMENT INVOLVED IN IGNITION

No equipment was involved in 53% of Revere's residential structure fires in 1991. Stovetops were involved in 16% of these incidents. The equipment involved was undetermined or not reported in 18% of these fires.

FORM OF HEAT OF IGNITION

Properly operating electrical equipment provided the heat of ignition in 18% of Revere's residential structure fires. Heat from gas fueled equipment provided the heat of ignition in 10% of these incidents; unspecified short circuits provided the heat in 6% of these fires; matches provided the heat of ignition in 5% of these incidents; cigarettes provided the heat in another 5%; and the form of heat of ignition was undetermined or not reported in 23% of these fires.

MATERIAL IGNITED

Food or cooking materials were first ignited in 13% of Revere's residential structure fires in 1991. Rubbish or waste products were first ignited in 6% of these fires; structural members were first ignited in 5% of these incidents; boxes, cartons or bags were first ignited in 5% of these fires; and in another 5% of these incidents, electrical wire or cable insulation was first ignited. The material first ignited was undetermined or not reported in 12% of these incidents.

IGNITION FACTOR

Sixteen per cent (16%) of Revere's residential structure fires were considered suspicious or incendiary, or, for purposes of analysis, arson. Stoves or other heat sources were left unattended in 16% of Revere's residential structure fires; 9% resulted from short circuits or ground faults in electrical equipment or appliances; and 7% of the residential structure fires were caused by abandoned material. The ignition factor was undetermined or not reported in 18% of these fires.

LEADING CAUSES

The leading causes of Revere's residential structure fires were: unattended cooking and other cooking accidents; arson; the careless use and disposal of smoking materials; and electrical problems.

WHEN

July was the peak month for fire incidents in Revere in 1991. April, October and December ranked second. The fewest fires occurred in March. May had the second smallest number of fires.

Saturday was the peak day for fires in 1991. Sunday ranked second and Monday ranked third. The smallest number of fires occurred on Wednesday. Thursday had the second smallest number of fires.

The period between 8:00 p.m. and midnight was the peak time interval for fires in Revere in 1991. The period from noon to 4:00 p.m. ranked second, and the period from 4:00 p.m. to 8:00 p.m. ranked third. The smallest number of fires occurred between 8:00 a.m. and noon. The period from 4:00 a.m. to 8:00 a.m. had the second smallest number of fires.

STRUCTURE FIRES

October was the peak month for structure fires in Revere in 1991. January and November ranked second. The fewest structure fires occurred in the months of June, September and December.

Tuesday was the peak day for structure fires in Revere. Sunday and Monday ranked second. The smallest number of fires occurred on Wednesday.

The period from noon to 4:00 p.m. was the peak time period for structure fires in Revere in 1991. The period from 4:00 p.m. to 8:00 p.m. ranked second. The period from 8:00 p.m. to midnight ranked third. The fewest structure fires occurred between 4:00 a.m. and 8:00 a.m. The second smallest number of these incidents occurred between 8:00 a.m. and noon.

MOTOR VEHICLE FIRES

December was the peak month for motor vehicle fires in Revere in 1991. July and September ranked second. No motor vehicle fires were reported in March. Only 2 were reported in May.

Saturday and Sunday were the peak days for motor vehicle fires. Monday and Friday ranked second. The fewest motor vehicle fires occurred on Tuesday. Wednesday had the second smallest number of these fires.

More than half of Revere's motor vehicle fires occurred at night or in the very early morning. Arson was the leading cause of motor vehicle fires, and arson fires are more likely to occur at night. The peak period for these incidents was from 8:00 p.m. to midnight and the period from midnight to 4:00 a.m. ranked second. The period from noon to 4:00 p.m. ranked third. The period between 8:00 a.m. and noon had the fewest motor vehicle fires.

MOTOR VEHICLE FIRES

In 1991, the 95 motor vehicle fires caused an estimated dollar loss of $205,600. Although the frequency of motor vehicle fires increased from 1990 to 1991, this is still 36% lower than the 148 reported in 1988.

Fifty-two (52), or 65%, of the 80 identified owners of burned motor vehicles did not live in Revere. Twenty-two (22), or 61%, of the 36 identified owners of motor vehicles burned in incendiary or suspicious fires were from out of town.

Eighty-six (86), or 91%, of the 95 motor vehicles that burned in Revere in 1991 were automobiles. Forty-three (43), or half, of the automobile fires were considered incendiary or suspicious.

ARSON FIRES

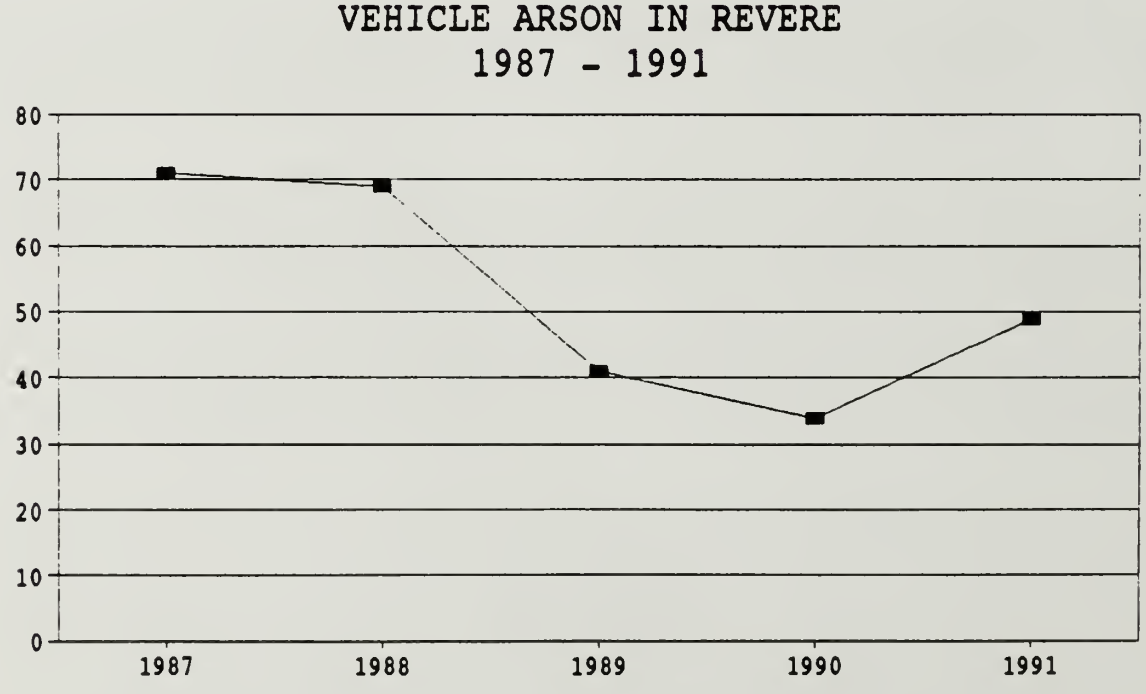
In 1991, 76, or 37%, of the 207 Revere fires were considered incendiary or suspicious, or, for purposes of this analysis, arson. The total number of reported arson fires increased by 23, or 43%, from the 53 reported in 1990.

Arson fires in 1991 caused 1 fire service injury and an estimated dollar loss of $277,350.

MOTOR VEHICLE ARSON

In 1991, 64% of Revere's arson fires were motor vehicle arsons. The 49 motor vehicle arsons resulted in an estimated dollar loss of $97,100. Fifty-one per cent (51%) of Revere's motor vehicle fires were considered suspicious or incendiary. The total number of reported motor vehicle arsons increased by 15, or 44%, from the 34 reported in 1990.

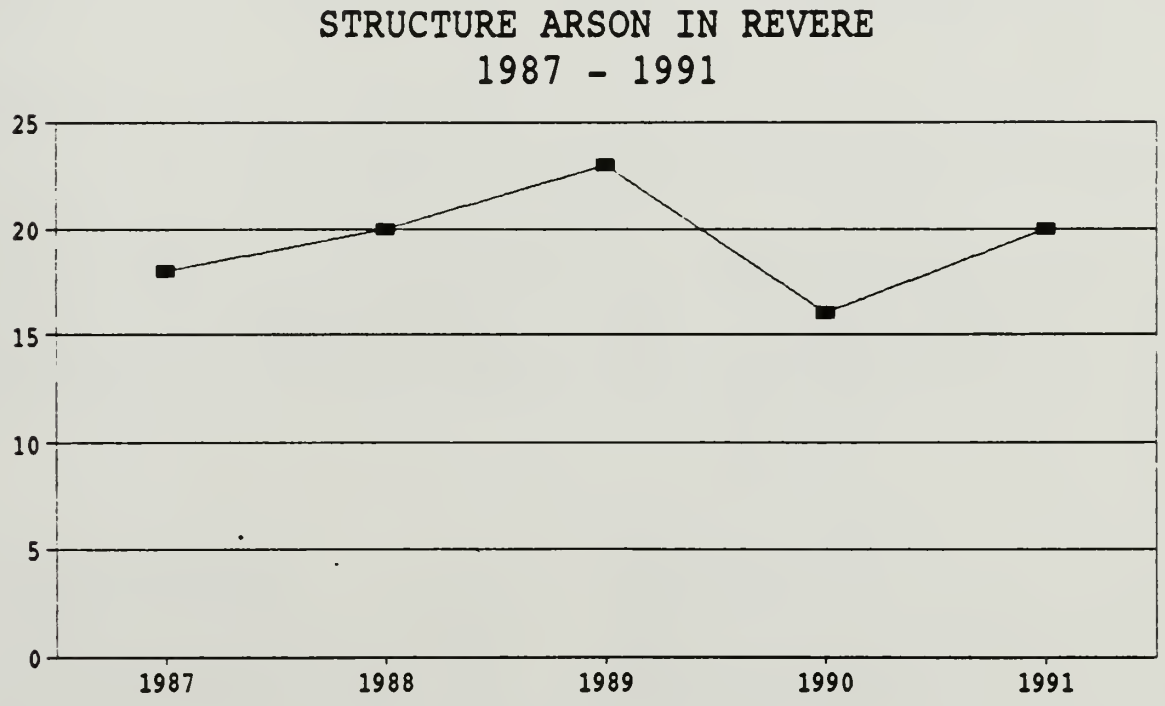
Two-thirds of Revere's motor vehicle arsons occurred between the hours of 8:00 p.m. and 4:00 a.m. Thirty-nine per cent (39%) of the motor vehicle arsons occurred between 8:00 p.m. and midnight and 29% occurred between midnight and 4:00 a.m.



STRUCTURE ARSON

The 20 structure arsons caused 1 fire service injury and an estimated dollar loss of $177,250. Twenty-six per cent (26%) of Revere's arsons in 1991 were structure arsons. Arson was indicated as the cause of 21% of the structure fires. The total number of reported structure arsons increased by 4, or 25%, from the 16 reported in 1991.

Forty per cent (40%) of the structure arsons in Revere occurred in apartments; 10% occurred in one- or two-family homes; and 10% occurred in clubs. More than one-third of the structure arsons occurred between midnight and 4:00 a.m. One-fifth occurred between 4:00 p.m. and 8:00 p.m.



OUTSIDE AND OTHER ARSON

Seven (7), or 44%, of the reported outside and other fires were considered arsons. These incidents resulted in an estimated dollar loss of $3,000. Outside and other arsons accounted for 9% of Revere's reported arson fires in 1991.

CONCLUSIONS

Total fires, motor vehicle fires, total arsons, structure arsons and motor vehicle arsons all increased in frequency from 1990 to 1991. Only the total numbers of structure fires and of residential structure fires declined.

Arson is a problem in the City of Revere. More than half of the motor vehicle fires, 21% of the structure fires, and 16% of the residential structure fires were considered incendiary or suspicious. In 1990, arson was indicated as the cause of 26% of the total of structure and motor vehicle fires. In 1991, the percentage of the combined total of structure and motor vehicle fires attributed to arson increased to 36%. The fact that increases were reported in both structure and motor vehicle arson only adds to the concern.

In addition to arson, other leading causes of Revere's residential structure fires were: unattended cooking; the careless use and disposal of smoking materials; and short circuits or ground faults in electrical equipment or appliances.

No working detectors were present in 52% of the residential structure fires (excluding those incidents in which the detector performance was unknown.) Without properly installed and maintained detectors to provide an early warning of fire, far too many of Revere's residents are at serious risk of death or injury resulting from fire.

REVERE **FDID: 25248** **POPULATION: 42,786**

TOTAL FIRES: **207** **$1,493,850**

4.8 Fires/1,000 Population

Structure Fires:	96	46.4%	$1,183,850
Vehicle Fires	95	45.9%	205,600
Other Fires	16	7.7%	104,400

Casualties

No fatal fires

Injuries: 6 Civilians 6 Fire Service

RESIDENTIAL STRUCTURE FIRES

TOTAL: 77

1- & 2-Family Homes:	38 (49%)	Apartments:	36 (47%)
Rooming Houses:	2 (3%)	Other:	1 (1%)

Deaths: 0 Injuries: 4 Civilians 5 Fire Service

DETECTORS

None present:	16 (21%)	Present and Operated:	32 (42%)
Present, but did not operate:	24 (31%)	Unknown:	5 (6%)

AREA OF ORIGIN		EQUIPMENT		FORM OF HEAT OF IGNITION	
Kitchen	30%	None	53%	Prop Op Elec Equip	18%
Bedroom	16%	Stovetop	16%	Heat/Gas Fueled Eq	10%
Living Room	9%	Unknown	18%	Unspec Short Circuit	6%
Crawl Space	6%			Cigarette	5%
				Match	5%
				Unknown	23%

MATERIAL IGNITED		IGNITION FACTOR	
Cooking Materials	13%	Unattended	16%
Rubbish	6%	Arson	16%
Elec Wire, Cable Insul	5%	Short Circuit, Ground Fault	9%
Structural Member	5%	Abandoned Material	6%
Box, Carton, Bag	5%	Unknown	18%
Unknown	12%		

MONTH	TOTAL FIRES	STRUCTURE FIRES	VEHICLE FIRES	OTHER FIRES
JANUARY	15	10	4	1
FEBRUARY	15	9	5	1
MARCH	9	7	0	2
APRIL	22	8	12	2
MAY	10	7	2	1
JUNE	14	6	5	3
JULY	23	8	13	2
AUGUST	17	8	9	0
SEPTEMBER	19	6	13	0
OCTOBER	22	11	9	2
NOVEMBER	19	10	9	0
DECEMBER	22	6	14	2

DAY	TOTAL FIRES	STRUCTURE FIRES	VEHICLE FIRES	OTHER FIRES
SUNDAY	38	15	20	3
MONDAY	30	15	14	1
TUESDAY	28	18	8	2
WEDNESDAY	20	9	9	2
THURSDAY	25	14	10	1
FRIDAY	27	12	14	1
SATURDAY	39	13	20	6

TIME	TOTAL FIRES	STRUCTURE FIRES	VEHICLE FIRES	OTHER FIRES
0001 - 0400	35	12	22	1
0401 - 0800	21	7	12	2
0801 - 1200	20	8	7	5
1201 - 1600	44	26	16	2
1601 - 2000	36	24	10	2
2001 - 2400	51	19	28	4

MOTOR VEHICLE FIRES

TOTAL: 96
52 (65%) of the 80 identified owners lived out of town.
22 (61%) of the 36 identified owners of cars burned in motor vehicle arsons were lived out of town.

Automobiles: 85 (90%)
42 (49%) of the automobile fires attributed to arson

ARSON FIRES

TOTAL ARSONS: 76 — 1.78 Arson Fires/1,000 Population

	#	% TSF	% ARSON	DOLLAR LOSS
Structures:	20	21%	26%	$177,250
Vehicles:	49	51%	64%	97,100
Other Arsons:	7	44%	9%	3,000

Estimated Dollar Loss: $277,350

No Fatal Arson Fires

No Civilian Injuries — 1 Fire Service Injury

STRUCTURE ARSONS	#	%	PEAK TIMES OF DAY FOR VEHICLE ARSONS	#	%
1. 0001 - 0400	7	35%	1. 2001 - 2400	19	39%
2. 1601 - 2000	4	20%	2. 0001 - 0400	14	29%
3. 1201 - 1600	3	15%	3. 0401 - 0800	9	18%
3. 2001 - 2400	3	15%			

PEAK FIXED PROPERTY USES FOR STRUCTURE ARSONS	#	%
1. Apartments	8	40%
2. One- & Two-Family Homes	2	10%
2. Clubs	2	10%

REVERE FIRES FROM 1987 TO 1991

YEAR	TOTAL FIRES	STRUC FIRES	VEH FIRES	OTHER FIRES	TOTAL ARSONS	STRUC ARSONS	VEH ARSONS	OTHER ARSONS
1987	243	93	144	6	90	18	71	1
1988	254	102	148	4	91	20	69	2
1989	222	106	115	1	64	23	41	0
1990	200	113	80	7	53	16	34	3
1991	207	96	95	16	76	20	49	7

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WINTHROP FIRE DATA ANALYSIS

1991

Prepared by: The Suffolk County Arson Prevention Program
Office of the State Fire Marshal
1010 Commonwealth Avenue
Boston, MA 02215

Data Source: 1991 Massachusetts Fire Incident Reporting System

ANALYSIS OF WINTHROP'S FIRES IN 1991

In 1991, Winthrop's 66 fire incidents caused 1 civilian injury and an estimated dollar loss of $48,375. This translates to 3.6 fires per 1,000 population. The total number of fires reported to the Massachusetts Fire Incident Reporting System decreased by 3, or 4% from the 69 reported in 1990.

Nine (9) fire service personnel, 2 engine companies, 1 ladder company and 1 other vehicle responded to the average Winthrop fire in 1991. An average of 8 staff hours was spent at each fire incident.

STRUCTURE FIRES

The 42 structure fires caused 1 civilian injury, and an estimated dollar loss of $26,475. These incidents represented 64% of Winthrop's reported fires in 1991. The average estimated dollar loss per structure fire was $630. The total number of reported structure fires decreased by 7, or 14% from the 49 reported in 1990.

Ten (10) fire service personnel, 2 engine companies, 1 ladder company and 1 other vehicle responded to the average Winthrop structure fire. An average of 8 staff hours was spent at each incident.

MOTOR VEHICLE FIRES

The 11 motor vehicle fires caused an estimated dollar loss of $19,900. Motor vehicle fires comprised 17% of Winthrop's reported fires in 1991. The average estimated dollar loss per vehicle fire was $1,809. The total number of motor vehicle fires decreased by 3, or 21%, from the 14 reported in 1990.

Four (4) fire service personnel, 1 engine company, 1 ladder company and 1 other vehicle responded to the average Winthrop motor vehicle fire. An average of 2 staff hours was spent at each of these fires.

OUTSIDE AND OTHER FIRES

The 13 outside and other fires caused an estimated dollar loss of $2,000. Outside and other fires comprised 20% of the 66 Winthrop fires reported in 1991. The total number of reported outside and other fires more than doubled from the 6 reported in 1990.

Nine (9) fire service personnel, 2 engine companies, 1 ladder company and 1 other vehicle responded to the average outside or other fire in Winthrop. An average of 10 staff hours was spent at each of these fires.

RESIDENTIAL STRUCTURE FIRES

In 1991, 33, or 79%, of Winthrop's 42 structure fires occurred in residential occupancies. This represents a decrease of 4, or 12%, from the 37 residential structure fires reported in 1990.

In 1991, residential structure fires caused 1 civilian injury.

RESIDENTIAL OCCUPANCIES

Twenty (20), or 61%, of Winthrop's residential fires occurred in one- or two-family homes; 12, or 36%, occurred in apartments; and 1, or 3%, occurred in a rooming houses.

DETECTORS

Smoke or heat detectors were present and operated in 14, or 42%, of Winthrop's residential structure fires. Detectors were present, but did not operate in 9, or 27%, of these incidents. No detectors were present in 5, or 15% of these fires. In the remaining 5 residential structure fires, detector status was undetermined or not reported.

AREA OF ORIGIN

In 1991, 45% of Winthrop's residential structure fires began in the kitchen; 12% began in the bedroom; 9% originated in the heating equipment room; 9% started in the living room; 6% began in the bedroom; and another 6% originated in the bathroom.

EQUIPMENT INVOLVED IN IGNITION

No equipment was involved in 24% of Winthrop's residential structure fires in 1991. Stovetops were involved in 18% of these incidents and ovens were involved in another 18% of these fires. Portable cooking units were involved in 6% of the residential structure fires; dryers were also involved in 6% of these fires. Washing machines were also involved in 6% of these incidents.

FORM OF HEAT OF IGNITION

Heat from properly operating electrical equipment provided the heat of ignition in 24% of Winthrop's residential structure fires; gas-fueled equipment provided the heat in 18% of these incidents; overloaded electrical equipment provided the heat in 9% of these fires; and in another 9%, the heat was provided from electrical equipment that was arcing or overloaded, but could not be further classified.

MATERIAL IGNITED

Food or cooking materials were first ignited in 36% of Winthrop's residential structure fires in 1991. Upholstered furniture was first ignited in 6% of these fires; drive belts or v-belts were first ignited in 6% of these incidents; structural members or framing were first ignited in another 6%; and the material first ignited was not classified in an additional 6% of these fires.

IGNITION FACTOR

In 1991, 12% of Winthrop's residential structure fires resulted from inadequate control of an open fire. Unclassified operational deficiencies caused 12% of these incidents; 9% resulted from part failures, leaks, or breaks; 9% occurred when stoves or other heat sources were left unattended; and the ignition factor was unknown in another 9% of these fires.

LEADING CAUSES OF RESIDENTIAL STRUCTURE FIRES

Cooking accidents resulted in the largest number of Winthrop's residential structure fires. Problems with washing machines and with dryers were other leading causes of these incidents.

WHEN

April was the peak month for fire incidents in Winthrop in 1991. January ranked second and March ranked third. July had the fewest fires. The smallest number of fires occurred in June.

Thursday and Friday were the peak days for fires in 1991. Saturday had the next largest number of fire incidents. Monday had the fewest fires. Sunday and Tuesday had the second smallest number of fires.

The period between 4:00 p.m. and 8:00 p.m. was the peak time interval for fires in Winthrop in 1991. The period between noon and 4:00 p.m. ranked second, and the period from 8:00 p.m. to midnight ranked third. The smallest number of fires occurred between midnight and 4:00 a.m. The period from 4:00 a.m. to 8:00 a.m. had the second smallest number of fires.

STRUCTURE FIRES

April was the peak month for structure fires in Winthrop in 1991. January and May ranked second. The fewest structure fires occurred in the months of June and July.

Saturday was the peak day for structure fires in Winthrop. Thursday ranked second. Sunday and Monday ranked third. The smallest number of fires occurred on Tuesday, Wednesday and Friday.

The period from 4:00 p.m. to 8:00 p.m. was the peak time period for structure fires in Winthrop in 1991. This is the time when meals are prepared, and is consistent with cooking being the leading cause of structure fires. The period from noon to 4:00 p.m. ranked second, and the period 8:00 a.m. to noon ranked third. The fewest structure fires occurred during the periods from midnight to 4:00 a.m., and from 4:00 a.m. to 8:00 a.m.

MOTOR VEHICLE FIRES

April was the peak month for motor vehicle fires in Winthrop in 1991. January ranked second and June ranked third. No motor vehicle fires were reported in the months of March, May, August, September, October and November.

Friday was the peak day for motor vehicle fires. Tuesday ranked second. Sunday and Wednesday ranked third. No motor vehicle fires were reported on Monday or Saturday.

The peak period for motor vehicle fires in Winthrop was from 4:00 p.m. to 8:00 p.m. The period from noon to 4:00 p.m. ranked second, and the period from 8:00 a.m. to noon ranked third. No motor vehicle fires were reported between midnight and 4:00 a.m.

OUTSIDE AND OTHER FIRES

April was the peak month for Winthrop's outside and other fires in 1991. The month of March ranked second. February, September, October and December ranked third. No outside or other fires were reported during the months of January, May, June, July, August or November.

Wednesday, Friday and Saturdays were the peak days for outside and other incidents. No outside or other fires were reported on Monday.

The peak time period for outside and other fires was from 8:00 p.m. to midnight. The period from 4:00 p.m. to 8:00 p.m. ranked second, and the periods from 8:00 a.m. to noon, and from noon to 4:00 p.m. ranked third. No outside or other fires were reported between midnight and 8:00 a.m.

MOTOR VEHICLE FIRES

In 1991, the 11 motor vehicle fires caused an estimated dollar loss of $19,900. Seven (7), or 64%, of the motor vehicles that burned in Winthrop were automobiles. Automobiles were burned in both motor vehicle arsons.

ARSON FIRES

In 1991, 17, or 26%, of the 66 Winthrop fires were considered incendiary or suspicious, or, for purposes of this analysis, arson. These 17 arson fires caused an estimated dollar loss of $14,025. Fortunately, no one was injured in these fires. The total number of reported arson fires decreased by 2, or 11%, form the 19 reported in 1990.

The 5 structure arsons caused an estimated dollar loss of $10,025. Twelve per cent (12%) of Winthrop's structure fires were considered incendiary or suspicious. More than one-quarter of Winthrop's arsons in 1991 were structure arsons. Structure arsons declined by 6, or 55%, from the 11 reported in 1990.

The 2 motor vehicle arsons resulted in an estimated dollar loss of $4,000. Eighteen per cent (18%) of Winthrop's motor vehicle fires were considered suspicious or incendiary. The total number of reported motor vehicle arsons decreased by 3, or 60%, from the 5 reported in 1990. Twelve per cent (12%) of Winthrop's arson fires were motor vehicle arsons.

The 10 outside and other arsons accounted for the remaining 59% of Winthrop's arson fires. No dollar loss was reported from these fires. More than three-quarters (77%) of the outside and other fires were considered incendiary or suspicious.

WHEN

In 1991, 35% of Winthrop's arson fires occurred between 8:00 p.m. and midnight; 24% occurred between noon and 4:00 p.m.; and 18% occurred between midnight and 4:00 a.m.

Twenty-four per cent (24%) of Winthrop's arson fires occurred on Wednesday; another 24% occurred on Friday; and 18% occurred on Thursday.

CONCLUSIONS

The total number of fires reported in Winthrop decreased slightly from 1990 to 1991. The frequency of reported structure fires and motor vehicle fires declined while the number of reported outside and other fires doubled.

Cooking was the leading cause of residential structure fires in Winthrop. Problems with washing machines and with dryers were other leading causes of these incidents.

Smoke or heat detectors operated to provide an early warning of the fire in exactly half of Winthrop's residential structure fires (excluding the incidents in which detector performance was not reported. The other half of the homes had no working detectors.

WINTHROP **FDID: 25346** **POPULATION: 18,127**

TOTAL FIRES: **66** **$48,375**

3.6 Fires/1,000 Population

Structure Fires:	42	64%	$26,475
Vehicle Fires	11	17%	19,900
Other Fires	13	20%	2,000

Casualties

No Fatal Fires 1 Civilian Injury

RESIDENTIAL STRUCTURE FIRES

TOTAL: 33

1- & 2-Family Homes:	20 (61%)
Apartments:	12 (36%)
Rooming House:	1 (3%)

No Fire Deaths 1 Civilian Injury

DETECTORS

None present: 5 (15%)
Present and Operated: 14 (42%)
Present, but did not operate: 9 (27%)
Unknown: 5 (15%)

AREA OF ORIGIN		EQUIPMENT		FORM OF HEAT OF IGNITION	
Kitchen	45%	None	24%	Properly Op Elec Eq	24%
Laundry Room	12%	Stovetop	18%	Heat/Gas-Fueled Eq	18%
Heat Equip Room	9%	Oven	12%	Ht/Elec Arc, Insuf Info	9%
Living Room	9%	Port. Cook.	6%	Ht/Overloaded Elec Eq	9%
Bedroom	6%	Dryer	6%		
Bathroom	6%	Washing Mach	6%		

MATERIAL IGNITED		IGNITION FACTOR	
Cooking Materials	36%	Inadeq Control Open Fire	12%
Upholstered Furniture	6%	Uncl. Operational Defic.	12%
Drive or V-Belt,	6%	Part Failure, Leak, Break	9%
Structural Member	6%	Unattended	9%
Unclassified	6%	Unknown	9%

MONTH	TOTAL FIRES	STRUCTURE FIRES	VEHICLE FIRES	OTHER FIRES
JANUARY	8	5	3	0
FEBRUARY	4	3	0	1
MARCH	7	4	0	3
APRIL	17	7	4	6
MAY	5	5	0	0
JUNE	3	1	2	0
JULY	2	1	1	0
AUGUST	3	3	0	0
SEPTEMBER	4	3	0	1
OCTOBER	5	4	0	1
NOVEMBER	4	4	0	0
DECEMBER	4	2	1	1

DAY	TOTAL FIRES	STRUCTURE FIRES	VEHICLE FIRES	OTHER FIRES
SUNDAY	8	6	1	1
MONDAY	6	6	0	0
TUESDAY	8	5	2	1
WEDNESDAY	9	5	1	3
THURSDAY	12	7	3	2
FRIDAY	12	5	4	3
SATURDAY	11	8	0	3

TIME	TOTAL FIRES	STRUCTURE FIRES	VEHICLE FIRES	OTHER FIRES
0001 - 0400	3	3	0	0
0401 - 0800	5	3	2	0
0801 - 1200	10	7	1	2
1201 - 1600	18	12	4	2
1601 - 2000	19	13	3	3
2001 - 2400	11	4	1	6

MOTOR VEHICLE FIRES

TOTAL: 11

Automobiles: 7 (64%)
2 (29%) of the automobile fires attributed to arson

ARSON FIRES

TOTAL ARSONS: 17 **0.94 Arson Fires/1,000 Population**

	#	% TSF	% ARSON	DOLLAR LOSS
Structures:	5	12%	29%	$10,025
Vehicles:	2	18%	12%	4,000
Other Arsons:	10	77%	59%	0

Estimated Dollar Loss: $14,025

No Casualties

PEAK TIMES OF DAY	#	%	PEAK DAYS OF WEEK	#	%
1. 2001 - 2400	6	35%	1. Wednesday	4	24%
2. 1201 - 1600	4	24%	1. Friday	4	24%
3. 0001 - 0400	3	18%	3. Thursday	3	18%

STRUCTURE ARSON INCIDENTS

Wed., 1/02/91 at 15:29	11 Kennedy Dr. Ex-W W II Bunker	No Dollar Loss
Wed., 1/09/91 at 00:07	94 Terrace Ave. One-Family	$5,000
Mon., 2/25/91 at 21:49	145 Bowdoin St. Outbuilding	No Dollar Loss
Tue., 7/16/91 at 01:02	217 Winthrop St. Church	$5,000
Tue., 8/13/91 at 02:53	900 Governors Park Apartments	$25

WINTHROP FIRES FROM 1987 TO 1991

YEAR	TOTAL FIRES	STRUC FIRES	VEH FIRES	OTHER FIRES	TOTAL ARSONS	STRUC ARSONS	VEH ARSONS	OTHER ARSONS
1987	53	28	18	7	15	5	5	5
1988	55	28	21	6	10	0	7	3
1989	42	34	7	1	7	4	2	1
1990	69	49	14	6	19	11	5	3
1991	66	42	11	13	17	5	2	10